

# hp·ux/usr

Hands-On Solutions for HP-UX Users • January 1994



**Multimedia Products on  
HP 9000 Series 700  
Workstations**

**Help! My Modem Doesn't Work • UNIX Panic? Don't Panic!**

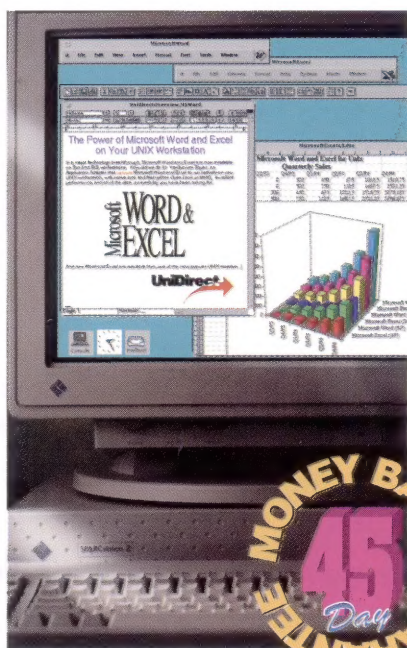
*A Publication of Interex • The International Association of Hewlett-Packard Computing Professionals*



UniDirect

# Microsoft<sup>®</sup> WORD<sup>®</sup> for UNIX<sup>™</sup> or Microsoft<sup>®</sup> EXCEL<sup>®</sup> for UNIX<sup>™</sup>

Now  
For HP!



Now you can upgrade most DOS or UNIX spreadsheets or word processors and get the best selling spreadsheet or word processor in the world—Microsoft Excel or Word. On either SGI, Sun or HP. How did we do it? Quorum Equal™ rehosts Word and Excel to run natively on your UNIX desktop. It is fast (equivalent to 386 or Mac IIsi on a low-end workstation), it is native (you'll get full Open Look or Motif style), it is legal (endorsed by Microsoft) and it supports a floating license. And now while supplies last, you can receive a competitive upgrade for either Word or Excel for just \$299 each.

\* All you need to do is FAX us proof of purchase (e.g. cover of manual, copy of diskette) for most DOS or Unix spreadsheets or word processors. Call your UniDirect sales rep for information on which DOS or Unix spreadsheets are qualified for the \$299 competitive upgrade.

If you already own a license for Word or Excel, you can transfer your DOS or MAC license or use your Microsoft "Select" contract as proof of purchase and get a copy of Equal for just \$598.

**1-800-755-8649 TO ORDER**

Competitive Upgrade  
**\$299**  
Limited Time Offer  
for UNIX

CIRCLE 92 ON READER SERVICE CARD

FAX: 714-707-3095 ▼ UNIDIRECT CORP. ONE VENTURE #150, IRVINE, CA 92718 ▼ 800-755-8649



# We've discovered an affordable cure for amnesia.

Why suffer memory loss on your next upgrade? Instead of losing the memory you replace, let Datasys give you meg-for-meg trade-in credit on your existing memory when you upgrade to any Datasys memory product.

Datasys offers you a full-line of quality memory products for HP 3000 and HP 9000 systems, including memory products that support HP's 9xx, 8xx and Emerald platforms. Datasys memory is totally transparent to your system and is 100-percent compatible with HP's diagnostics for optimum performance.

And nobody beats Datasys memory for cost effectiveness. With average savings of 30-50% below HP's list price, Datasys memory can make a dramatic difference. Plus, Datasys memory is backed by a lifetime warranty and next-day replacement guarantee.

You can depend on Datasys quality. Our memory boards have never failed—not once. When you use Datasys memory, you'll continue receiving your current level of support from HP. And Datasys' technical support is on-call for you 24-hours-a-day, seven-days-a-week.

Best of all, Datasys memory is in stock and ready for immediate shipment.

Why suffer from system amnesia? Pay only for what you gain, not for what you get.

Call today and let Datasys cure your memory loss.

## DATASYS MEMORY FEATURES

- Lifetime warranty
- Meg-for-meg trade-in credit
- Service call reimbursement
- User-installable
- Next-day replacement guarantee
- 100% transparent to your system
- 100% compatible with HP diagnostics
- Solid state
- IBI-tested for quality and performance
- 30-50% savings off HP's list prices

# Datasys

Demand The Best.

**Call 1-800-DATASYS**

CIRCLE 31 ON READER SERVICE CARD

**Datasys**



# Contents



UNIX Panic?  
Don't Panic!  
See page 34

## Features

### Multimedia Products on HP 9000 Series 700 Workstations

by Kaushik Mehta 14

### Help! My Modem Doesn't Work

by John A. Pezzano 24

### UNIX Panic? Don't Panic!

by Dennis McClure 34

## Departments

Q&A 6

CSL/HP-UX 54

New Products 56

## Columns

HP-UX Systems Administration by Chris Curtin 42

X-Watch by Larry Headlund 46

CD-ROM by Bill Hassell 52

New Products  
See page 56



Cover Story:  
Multimedia Products on  
HP 9000 Series 700 Workstations  
See page 14





# Lose your mouse and increase your productivity.

## *A Tired Hand Isn't A Productive Hand*

### Fingertip, Not Elbow

**Control** If you're using a mouse, you're asking for trouble. The motions required to operate a mouse have been shown to cause severe fatigue and repetitive motion injuries. Injuries that can slow you down, and inflict permanent damage to your hand. Even if the repetitive motions in mouse

usage haven't caused any injury in your case, they will definitely tire you out. That's why the MOUSE-TRAK® is designed to eliminate wasteful and tiring arm and wrist movements. The fingertip control of our

trackball and input keys, and our elevated hand support can reduce fatigue and the risk of repetitive motion injuries. So don't get caught in the RMI trap (*Call our 800 number or contact us via Internet, and we'll send you a complete analysis of repetitive motion syndrome and why MOUSE-TRAK is superior to mice.*)

**Industrial Model Available** Our *Industrial* model has the same ergonomic design as the *Professional*, with heavy-duty features like a super-strong Xenoy thermoplastic case, shielded cable, and greater moisture resistance.

**Lose Your Tiring Mouse and Increase Productivity** To order your MOUSE-TRAK in the U.S.A. call:

**1 - 800 - 533 - 4822**  
yvonne @ moustrak.com

**mouse-trak®**

#### INDUSTRIAL MODELS

HP/APOLLO	\$295
SUN Sparc	\$295
DEC	\$295
Silicon Graphics	\$295
NCD X-Terminal	\$295
RS/6000	\$295
PCserial	\$295
PS/2	\$295
Macintosh ADB	\$295

#### PROFESSIONAL MODELS

HP/APOLLO	\$199
SUN Sparc	\$199
DEC	\$199
Silicon Graphics	\$199
NCD X-Terminal	\$179
RS/6000	\$179
PCserial	\$179
PS/2	\$179
Macintosh ADB	\$179

**HP Serial MOUSE-TRAK now Available  
For 700 Series. No Quad Port Adapter Required.  
Call For Information.**

**ORDER TOLL FREE 1 - 800 - 533 - 4822**

**International MOUSE-TRAK dealers:** NTWare Ltd. Pangbourne, Berkshire U.K. Tel: 0734 845792 • Skrivervik Data Oslo, Norway Tel: 47 2 18 58 00 • The Chameleon Group Dusseldorf 1, Germany Tel: 0211-379057 • Datacomp Dietikon, Switzerland 01 740 51 40 • SC METRIC A/S Skodsborgvej Naerum, Denmark Tel: 42 80 42 00 • Guillevin Mississauga, ONT Tel: 416 670 8433 • Hypec Electronics Ryde, Australia Tel: (02) 808 3666 • SPECMA Gothenburg, Sweden Tel: 031 89 16 00 • Aurora Systems, Inc. Seoul, Republic of Korea Tel: 718-4985 • PHASELYS Rosny Sous Bois, France Tel: 48.94.84.85 • Seg Tec Azur, Israel Tel: 972 3 556 7458 • MOUSE-TRAK is manufactured in the U.S.A. by ITAC Systems, Inc., 3113 Benton Street, Garland, Texas 75042 Fax: 214/494-4159 Patented by ITAC Systems, Inc. MOUSE-TRAK is a registered trademark of ITAC Systems, Inc. Other brand and product names are trademarks of their respective holders.

**CIRCLE 78 ON READER SERVICE CARD**



**UniDirect**

# Turn Your PC Into an X Terminal for \$195



## Can't afford a PC X Server—Think Again

AGE Logic has now released the affordable X server created for the non-technical PC user with a limited budget. XoftWare/DT or DeskTop. Like the other X servers you get cut and paste, point and click, etc. XoftWare™ (sounds like "zoft-ware") even has a facility to make your X windows act like Microsoft Windows.

## XoftWare/32

For super high performance consider the new 3.0 XoftWare/32 with easy to use Professional Edition Utilities; point and click file transfer, Unix to Window printing, Telenet, trace diagnostics, to name a few. Call for pricing.

## XoftWare/NT

Now available for Windows and NT. Call for details.

## Call Our TCP & X Server Experts Today!

Site Licenses Available.

**XoftWare—just one of more than 80 products from the #1 Name in Name Brand Unix Software.**



**Free Catalog of Unix Software & PC Connectivity Tools**

## 1-800-755-8649 TO ORDER

FAX: 714-707-3095 ▼ UNIDIRECT CORP. ONE VENTURE #150, IRVINE, CA 92718 ▼ 800-755-8649



INTEREX EXECUTIVE DIRECTOR  
**Charles A. Piercey**  
PUBLICATIONS MANAGER  
**Connie Wright**

**EDITORIAL**  
MANAGING EDITOR  
**Michael Ehrhardt**  
COPY EDITOR  
**Richard Kranz**  
NEW PRODUCTS EDITOR  
**Michelle Pollace**  
PROOFREADER  
**Jean Nattkemper**

**ADVERTISING & MARKETING**  
ADVERTISING MANAGER  
**Brian Hallin**  
ACCOUNT REPRESENTATIVE  
**Liana Fisher**  
MARKETING & COMMUNICATIONS  
MANAGER  
**Denise Garlow**

**DESIGN AND PRODUCTION**  
PRODUCTION MANAGER  
**Bruce Saltzman**  
SENIOR GRAPHICS DESIGNER  
**Molly McGinnity**  
GRAPHICS DESIGNER/  
PRODUCTION COORDINATOR  
**Tami Bosworth**  
GRAPHICS DESIGNER  
**Gale Patterson**  
DTP SPECIALIST  
**June Ramirez**

*hp-ux/usr* is published bimonthly by Interex, the International Association of Hewlett-Packard Computer Users. Third-class postage paid at Sunnyvale, California 94086 and additional offices. The editorial and business offices are located at 1192 Borregas Ave., Sunnyvale, California 94089, USA, 408.747.0227, Fax 408.747.0947. Address membership questions and change of address to Membership Services. Address all questions concerning circulation/distribution to the Distribution Manager.

Remittances should be sent to Interex,  
File No. 61054, P. O. Box 60000,  
San Francisco, California 94160, USA.

Address all editorial correspondence to Michael Ehrhardt,  
Editor, *hp-ux/usr* Magazine, c/o Interex,  
P.O. Box 3439, Sunnyvale, California 94088-3439, USA.

Member Services (Site or General) include a  
subscription to *hp-ux/usr*. For other Member Services  
refer to membership form.

Statements of fact and opinion are the responsibility  
of the authors alone and do not imply an opinion on  
the part of the Interex Board or Magazine.  
Entire contents copyright © 1994 by Interex.  
All rights reserved.

POSTMASTER: Send address changes to:  
Interex, P.O. Box 3439,  
Sunnyvale, California 94088-3439 USA.  
Attention: Member Services.

TRADEMARKS: UNIX, UNIX System Laboratories, Inc;  
HP-UX, Hewlett-Packard; X Window System,  
Massachusetts Institute of Technology

Bulk rate U.S. postage paid  
Senatobia, MS . PERMIT # 30

## How to Contact Interex...

### EDITORIAL SUBMISSIONS

*hp-ux/usr* encourages readers to contribute their opinions, tips, and solutions. When sending letters for publication or to request author contribution guidelines, please address them to *hp-ux/usr* editor Michael Ehrhardt.

**Postal Address:**  
Interex  
P.O. Box 3439  
Sunnyvale, CA 94088-3439

**Office Address:**  
1192 Borregas Avenue  
Sunnyvale, CA 94089

Because of the difference in zip codes between our office address and P.O. Box, please be sure to address all regular mail to the P.O. Box. Any express service packages should be delivered to the Borregas Avenue address. Thank you for your attention to this small but significant detail.

### TELEPHONE:

The Interex switchboard is open 8:00 a.m.-5:30 p.m., Pacific Time. Call 800.468.3739 (U.S. and Canada) or 408.747.0227. After 5:30 p.m. our voicemail system will record your call.

### FACSIMILE:

Call 408.747.0947

### INTERNET:

To send e-mail to Interex, use the following address format:  
<IDname>@interex.org  
The following IDs are currently active on Interex's HP 9000:

ID	Department
ehrhardt	<i>hp-ux/usr</i> Letters to the Editor, Q&A, and requests for author guidelines
postmaster	Internet support
cslhpx	Contributed Software Library
membership	Membership/subscription inquiries and services
pups	Circulation and advertising inquiries
conference	Conference questions and arrangements

An example would be Ehrhardt@interex.org  
*Anything before the @ sign is case insensitive.*

### COMPUERVE:

Interex can be contacted via the CompuServe ↔ Internet gateway. To send CompuServe mail, use the following format:  
>INTERNET: ehhardt@interex.org

You can address your mail to specific departments using the ID's listed above.

Interex maintains a CompuServe account that is collected daily. Please address all messages to ID no. 76376, 1222.



**interex**

*Shared Knowledge.*

*Shared Power.*

As a not-for-profit association of HP computing professionals, Interex is dedicated to meeting the information, education, and advocacy needs of its members worldwide.

In today's world of rapidly changing technology, Interex puts hands-on solutions to hardware, software, and operating system problems at your fingertips. Because members actively contribute—exchanging ideas and sharing solutions—Interex has become a vital link in the transfer of HP expertise.

Operating independently from Hewlett-Packard, Interex has more than 20 years of serving HP computing professionals. Through its publications, conferences, and volunteer committee structures, Interex has the qualifications to represent you, a valuable member of the HP user community.

Interex® is a trademark registered in the U.S. Patent and trademark office.





## Question & Answer

**Q:** I'm having troubling following the cylinder group structure used in HP-UX file systems. If I examine `cd_ndblk`, it appears that there is a modulo-16 quirk in the size of a cylinder group.

**A:** The answer to how the file system knows where the cylinder groups are can be found in the `mkfs` source. The routine lays out cylinder group blocks, one per cylinder group, to a fixed location, and then computes the size of remaining data blocks based on the CG block's location within the remaining space. From a higher level, the loop is (simplified for clarity):

```
sbblock.fs_fpg = (sbblock.fs_cpg * sbblock.fs_spc) / NSPF(&sbblock);
/* frag per group =
    (cyl per group * sectors per cyl) / (sectors per frag)
note that all "sectors" are considered to be DEV_BSIZE in size */
.
.
.
for (cylno = 0; cylno < sbblock.fs_ncg; cylno++) {
    initcg(cylno);
}
```

And in `initcg` (part of `mkfs`):

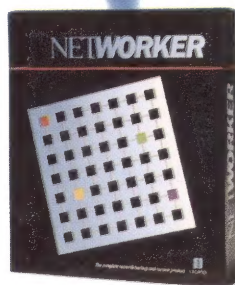
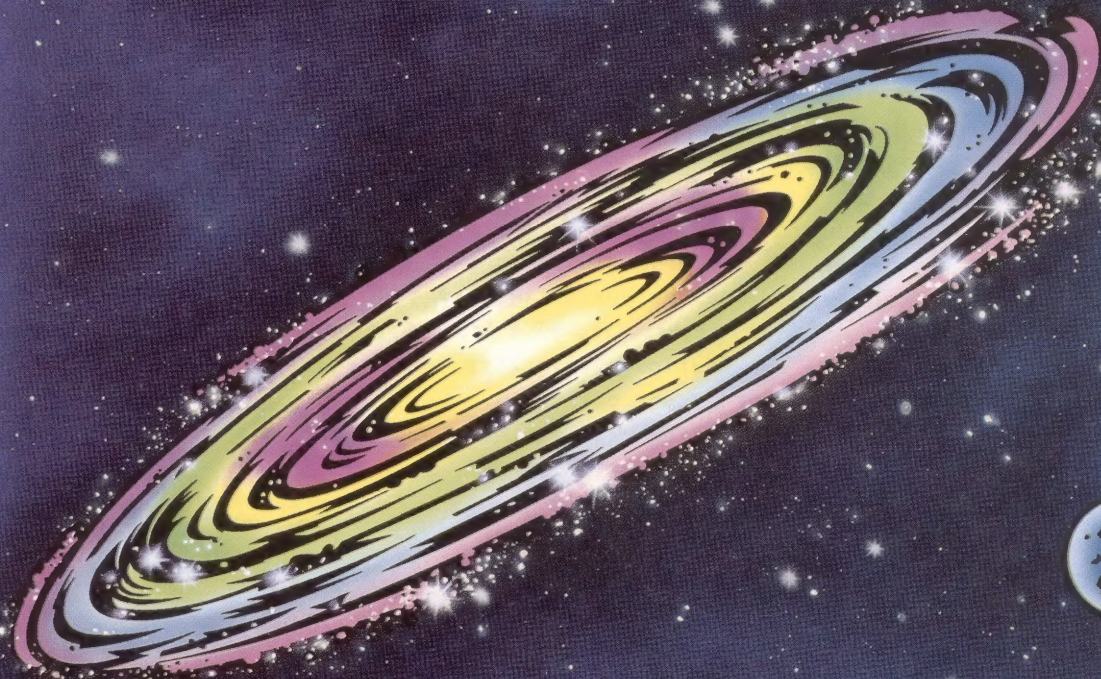
```
/*
 * Determine block bounds for cylinder group.
 * Allow space for super block summary information in first
 * cylinder group.
 */
#define cgbase(fs, c) ((daddr_t)((fs)->fs_fpg * (c)))
/* frag's per group..*/
cbase = cgbase(&sbblock, cylno);
/* cbase is start of cg in frag addr */
dmax = cbase + sbblock.fs_fpg;
/* dmax is the end of the cg data */
if (dmax > sbblock.fs_size)
    dmax = sbblock.fs_size;
.
.
.
acg.cg_ndblk = dmax - cbase;
/* num data blocks in cg */
```

So for each cylinder group, the cg block is put down starting at location `fs->fpg * c` : the number of frag's per CG \* the number of this CG.





# BACKUP YOUR HP 9000 TODAY TOMORROW THE UNIVERSE.



Whether you're worried about keeping pace with the explosive growth of your HP 9000 file system, or backing up multiple platforms from a single location, Legato NetWorker® has you covered.

That's because NetWorker is simply the best network backup solution available. In fact, LAN Magazine awarded NetWorker 1993 *Backup Product of the Year*, InfoWorld ranked NetWorker the *best backup software* and Open Systems Today called it the *Next Generation Network Backup Solution*.

NetWorker's true client/server technology will earn your recognition, too. Its modular design lets you easily expand your backup strategy. Start with NetWorker for HP 9000 today; and as your network grows and you need to backup multivendor UNIX workstations or PC LANs, just add ClientPaks. It's that simple.

NetWorker also makes it easy for your users to handle their own recoveries, freeing up valuable administrative time.

Call Innovus Inc. for a product overview at 905-529-8117



## LEGATO™

© 1993 All trademarks are the property of their respective owners

CIRCLE 66 ON READER SERVICE CARD



The point in all this is that the CG is a fixed size, as computed by the number of frag's per cylinder, and that the number of data blocks is computed based on this fixed size, not the other way around. The location of data, inodes, redundant superblocks, etc., can then be found by expanding macros in `<sys/fs.h>` and using the values in the file system superblocks. Refer to the box on the right.

Note that the start of the cg structure itself is moved in increments of `fs_cgoffset` increments so as to allow cgblocks to be rotationally distinct. On a typical system here, the important values (from the `dumpfs` command) are:

```
cblkno 24      cgoffset 40      cgmask 0xffffffff0      or
```

So, every cg structure is offset from the start of the cg by

```
fs_cblkno + fs_cgoffset * (c & ~fs_cgmask)
24      +      40      * c & 31
```

This offset/modulo stuff keeps the CG structures rotationally distinct, so that they are not susceptible to be all trashed by the same head crash, but it does make them non-trivial to find (unless you know the magic formula).

Another pointer is to look at the McKuzic file system textbooks and peruse the output of the `dumpfs` command.

**Q:** I'd like to process incoming mail myself and strip off the headers. What is the easiest way to do this?

**A:** When working with e-mail documents, the mail headers usually must be deleted by hand. Standards for e-mail indicate that the first blank line in a mail message is the start of the message, so here's a sed string that will remove all leading lines up to the first blank line:

```
sed -e '1,/^\n *$/d' some_mail_file
```

```
/*
 * Cylinder group macros to locate things in cylinder groups.
 * They calc file system addresses of cylinder group data structures.
 */
#define cgbase(fs, c)      ((daddr_t)((fs)->fs_fpg * (c)))
#define cgstart(fs, c) \
    (cgbase(fs, c) + (fs)->fs_cgoffset * ((c) & ~((fs)->fs_cgmask)))
#define cgsblock(fs, c)   (cgstart(fs, c) + (fs)->fs_sbkn0)
/* super blk */
#define cgtod(fs, c)       (cgstart(fs, c) + (fs)->fs_cblkno)
/* cg block */
#define cgimin(fs, c)      (cgstart(fs, c) + (fs)->fs_ibkn0)
/* inode blk */
#define cgdmin(fs, c)      (cgstart(fs, c) + (fs)->fs_dblkno)
/* 1st data */
```

```
cat some_mail_file | sed -e '1,/^\n *$/d'
```

In the examples, the output goes to stdout; you may want to redirect stdout to a file as in:

```
sed -e '1,/^\n *$/d' some_mail_file > another_file
```

Now, how to get the e-mail to this script? Use the `/usr/lib/aliases` file and put in an entry like this:

```
mailtest: | /users/root/e-mail/myproc
```

where the `/users/root/e-mail/myproc` file has the above code to take stdin and redirect (append?) it to a file. As an example, the `myproc` file might read:

```
sed -e '1,/^\n *$/d' >> /tmp/myhist
```

where `myhist` is a collection of all files sent to the 'mailtest' address. `mailtest` does not have to be a user on the system (i.e., in the `passwd` file) since this is just a dummy mailaddress.

This is especially useful for maintaining an automated information collection where data can simply be mailed to a



## Attended Backup:

As much as you'd like to, you can't leave your car while traffic is backed up. But you can leave the office while your system is backing up—with reliable, affordable solutions from IEM.

**NEW!!**  
8mm SCSI support for  
HP 3000 and 9000/800 systems.

## Unattended Backup:



- 4mm, 8mm, QIC
- SCSI & HP-IB
- Standalone drives, autoteaders, and network backup software



IEM manufactures the broadest range of solutions for your backup and data transfer needs.



**One Source, Many Solutions**

*IEM is the manufacturer of the largest line of HP third-party peripherals.*

**In the U.S. and Canada:**

IEM, Inc., P.O. Box 1889  
Fort Collins, CO 80522 USA  
Phone: (1) 303-221-3005  
(1) 800-321-4671  
Fax: (1) 303-221-1909

**In the United Kingdom:**

IEM Europe, Ltd., Colorado House,  
Cromwell Park, Banbury Road,  
Chipping Norton, Oxfordshire. OX7 5SR.  
Phone: +[44] 0608 645000  
Fax: +[44] 0608 645155

**All others:**

IEM International Sales  
1629 Blue Spruce Drive  
Fort Collins, CO 80524  
Phone: (1) 303-221-3005  
Fax: (1) 303-221-1909



mail address and the information automatically put into a database.

**Q:** I need to create a special no-login account. What's the best way?

**A:** Many system administrators are asked to provide logins for dozens or even hundreds of users just to run some fixed application program on a particular system. In some cases, the task itself provides the security needed so that a password is not needed.

Although it is not recommended that a no-password account be set up on HP-UX, a reasonably secure method to allow a fixed process to run is to make the login shell equal to the process to be run.

Here are a few notes:

1. Make the login shell for */etc/passwd* an executable program (recommended) or a script (not as secure).

If you specify a script, the shell used to execute the script will be the Bourne shell, unless you have the letter *r* anywhere in the name of the script (such as */usr/local/bin/myscript*), in which case *rsh* (the restricted shell) will be used. *rsh* does not allow full pathnames (i.e., */usr/contrib/bin/stuff*), so if the script calls another script with a full pathname, it will fail with the error *restricted*.

For example, simply to request the date from a remote machine, the */etc/passwd* file would contain:

```
dateplz::287:20:DoTheDate:
/tmp:/bin/date
```

To access the program (*/bin/date*), just use *remsh* or *rlogin* as in

```
remsh test870 -l dateplz
```

or

```
rlogin hp897 -l dateplz
```

The response will be the date and the connection is closed.

2. To make a shell script more secure, use a program to schedule the script. Here is an example program:

```
#include <stdio.h>
#include <unistd.h>
main()
{
    if (execlp("/usr/local/bin/myscript") < 0)
    { fprintf(stderr,"Cannot execute myscript\n")
      perror("myscript");
    }
}
```

Replace the name of the script in the above program with your script name, or simply perform the tasks required within the program.

If you need the login to start a process and then return to the user, be sure to use *nohup* as the command to get the process going. Also be sure to set up any environment variables (i.e., *\$TERM*) as needed since no shell is running to set these items.

**Q:** I've always wondered how update can continue running after it does a reboot. What's the secret?

**A:** In order to finish the update after a reboot, the customize task is continued by creating a special *inittab* file. Here is the file at 9.0:

```
i2:2:initdefault:
io::sysinit:/etc/ioinit -i > /dev/console 2>&1
aa::bootwait:/etc/bcheckrc < /dev/console >
/dev/console 2>&1
```



```
ca::bootwait:/etc/mount -a -t hfs < /dev/console > /dev/console 2>&1
cz::bootwait:sh -c /customize < /dev/console >> /tmp/update.log 2>&1
da::bootwait:echo "/customize failed to reboot the system. "
    > /dev/console 2>&1
db::bootwait:if [ -f /etc/inittab.real ]; then \
    mv /etc/inittab /etc/inittab.failed; \
    mv /etc/inittab.real /etc/inittab; \
    fi </dev/console >/dev/console 2>&1
dd::bootwait:/etc/reboot -r < /dev/console > /dev/console 2>&1
```

The file is normally removed after a succesful update. It is provided here for troubleshooting purposes.

**Q:** Since upgrading to 9.x, whenever I run SAM on my tty terminal, I get the following error when I exit SAM:

```
unexpected abort of /usr/sam/bin/alpha_samx
and I get a core file. What is wrong?
```

**A:** For SAM to work properly, the software for your system must contain the BSDIPC-SOCKET file set. If you already have the 9.0 release running, do an ls of the /system directory to more to see if the BSDIPC-SOCKET file set is on your system. If your system does not have the file set, update the system to include it.

The S800 file for your system needs to contain the following line:

```
include uipc;
```

SAM uses socket connectivity to internally communicate. If uipc is not in the kernel, the socket system calls fail, and SAM aborts.

**Q:** I'm attempting to set up a netdist server and am encountering the following error:

```
# /etc/netdistd -f /netdist
ERROR netdist/tcp is not a registered service
```

**A:** The error *netdist/tcp is not a registered service* can be caused by any of the following:

1. The following line must exist in */etc/services*:

```
netdist 2106/tcp
```

2. Check for the service in */etc/inetd.sec*. If it exists, the netdist service has to be listed and allowed.

3. If you are running NIS, the master */etc/services* file must be updated to include netdist.

**Q:** I'm having problems getting LaserROM to run on my HP terminals. It isn't displaying things correctly.

**A:** If you're running X11 and an hpterm or xterm window, the window *must* be sized to 80x24 like any standard terminal. If the window is resized, the LaserROM/UX program does not use the new ROWS/COLUMNS value and therefore assumes the borders are 80x24 characters.

This is not a defect since the purpose of the character mode interface is to support ASCII terminals. Windows users are encouraged to use the graphical version. If the graphical version does not appear when running LaserROM/UX, then the \$DISPLAY environment variable has not been set. This value can also be set with `lrom -display myname:0`, where myname is the name of the graphical display CPU.

For HP terminals (not X11 windows), the problem may be caused by an incorrect setting in the terminal configuration of your terminal.

When using HP LaserROM with an HP terminal you should set the field:

```
InhEolWrp(C) [YES]
```

to "NO" in the terminal config screen and then save that configuration.

*Bill Hassell is an HP-UX system support engineer at the HP Atlanta Response Center. He can be contacted at his e-mail address, which is [blh@hpuaerca.atl.hp.com](mailto:blh@hpuaerca.atl.hp.com).*

Continued



## HP 9000 Workstations

**Q:** I have just installed the HP 9000 Fax software on my system and am sending my first fax. After entering all the information in the “Compose Outgoing Fax” window, I am trying to view the fax I am about to send. When I view the fax, I simply see two black lines on the first page, one thick and one thin. I have looked in my `$HOME/.fax/log` file and did not see any error messages. Why am I not able to view my fax properly?

**A:** In this case the problem is caused by incorrect group settings on the font files located in the directory:

```
/usr/lib/X11/fonts/ifo.st/typefaces
```

All the files in this directory should have a group setting of *bin*. In your case, the group setting was *other* for all of the font files that ended in the suffix *ifo*. To correct the problem you should log in as root and execute the command:

```
chgrp bin /usr/lib/X11/fonts/ifo.st/typefaces/*.ifo
```

Note that incorrect settings on other files or directories could also lead to problems when viewing a fax. You should also make sure that the directory

```
/usr/lib/X11/fonts/ifo.st/typefaces
```

has a group setting of *bin*. Also, the executable

```
/usr/fax/bin/asciitiff
```

You should now be able to view your fax properly.

**Q:** I am using the HP 9000 Fax software and am trying to customize the cover sheet with my own company's logo. I have followed the instructions in the online help section, but when I go to view my fax I get the error:

```
HP 9000 Fax CLIENT ERROR: Cannot preview fax.
Error producing cover sheet.
Request submitted at 13:25:54 06/15/93
Addressed to: John Smith
at fax number (404)555-1234
Please see the Help trouble shooting section for
'Rendering Cover Sheets' under 'Previewing a Fax'.
```

If I look in my `$HOME/.fax/log` file, I see the following additional error messages:

```
HP 9000 Fax SERVER ERROR | 13:25:55 06/15/93 | 14|
Attachment
rendering error. || Component: 5 Index: 0, Render Error:
Renderer failed: output from "ascii -l -s 11 tmp/cs10912
tmp/pf10912-1000": asciitiff: /tmp/ccit4.tif: bad image
assertion botched:
/usr/fax/convert/ascii: 10916 abort
```

I can use the command `/usr/bin/X11/imageviewer` and view the TIFF file I am using as a logo, so I know this is a good TIFF image. Why am I getting this error?

**A:** You are getting this error because the TIFF image you are trying to attach was not saved as a CCIT Group 3 image. The `asciitiff` command used to create the cover sheet requires a CCIT Group 3 type TIFF file. You should specify a CCIT Group 3 TIFF file in your cover sheet file.

Note that if you are using the Deskscan/UX software to create your TIFF image, you should specify either *Black and White Halftone* or *Black and White Drawing* as the “Image Type” when scanning the image, and then select *Tiff (CCIT/G3)* as the file format when saving the image. ■

---

*Kaushik Mehta of the Hewlett-Packard Response Center in Atlanta Georgia, answers workstation questions.*



## HP Series

	MB	1	2	4	8	12	16	32	64	128	256
HP-200/310/320											
HP-319											
HP-330/350/370											
HP-332											
HP-340											
HP-345/375/380											
HP-360											
HP-362											
HP-382											
HP-400/425/433											
HP-425E											
HP-700RX											
HP-705/710											
HP-715/725											
HP-720/730/735											
HP-742/745/747											
HP-750/755											
HP-8X7/9X7											
HP-FXX/GXX/HXX/IXX											

# PICK A CARD.

**Any card.** The memory you need is in stock, tested and ready to go. Order today. Upgrade your system tomorrow.

You'll get the quality and service you expect from the leader in HP workstation enhancements. We specialize in HP, it's the platform we know best.

Newport Digital TURBO cards and memory products are guaranteed to meet or beat HP quality standards. Every card we ship has been rigorously tested in a fully functional workstation, just like yours.

**Risk free.** Our total quality program gives us the confidence to offer an unconditional lifetime warranty. If one of our products fails, we'll ship a replacement by overnight express. We'll do anything we can to keep your workstation working.

**Call Today.** Speak with an expert on Hewlett-Packard computers. We'll make sure you get the cards you need.

Evaluate any of our memory products for 30 days. If you're not completely satisfied, return it without obligation.

**NEWPORT DIGITAL**  
**1-800-383-3642**

CIRCLE 85 ON READER SERVICE CARD





Everyone is talking about multimedia, from PC users to those with workstations. Multimedia is here to stay and it is revolutionizing the workstation market. More and more users demand the look and feel of a PC on a workstation, but do not wish to lose the power that the workstation offers. Now workstations have software products that enhance productivity and bring the workforce closer together, and for the folks who are scared to use workstations there are graphical user interfaces that are very user friendly.

K a u s h i k M e h t a



# Multimedia Products on HP 9000 Series 700 Workstations

Quite simply, multimedia enhances productivity, whether it be a large industrial operation or a small home office in a suburban basement. The power it uses to retrieve and manipulate data is mind-boggling. Some of the multimedia options

may not be immediately useful for one's current application, but it is a great feeling to have it and become familiar with its many capabilities. A multimedia user should be prepared to have a large disk(s) and lots of swap space available in order to see good performance. A large physical memory (RAM) will also help.

It won't be too long before video-conferencing is done over Internet, and there's more to come—playing audio CDs, dialing telephone numbers by cutting and pasting a number from the workstation window screen onto a telephone icon, and much more.

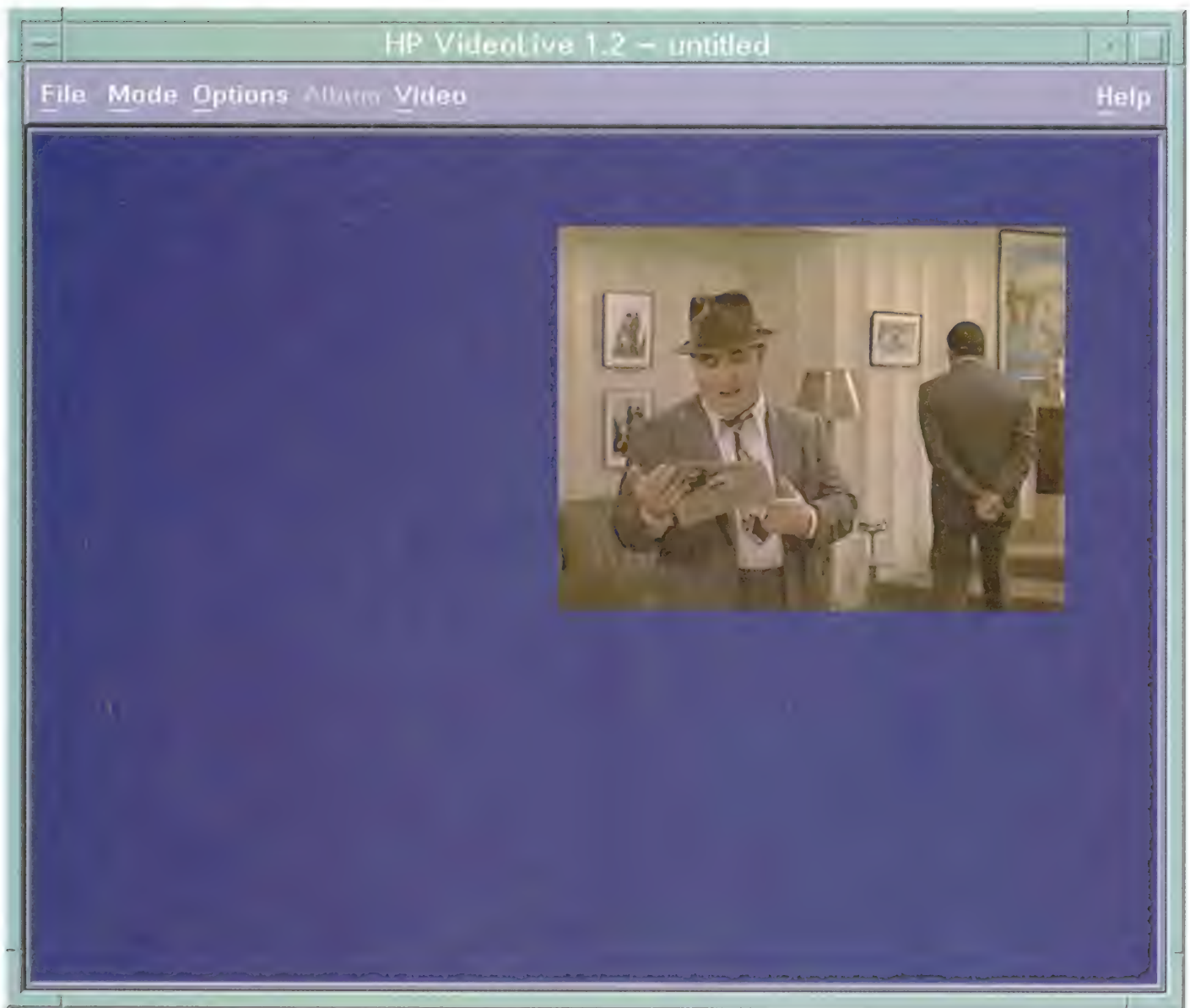
In the past several months Hewlett-Packard has released several multimedia products for the HP 9000 Series 700. This article goes through some of the multimedia products and lists their functions. I will discuss HP RasterOps Videolive, HP 9000 FAX, DeskScan/UX, and SharedPrint/UX. Multimedia such as Audio, Imaging, and Shared Whiteboard will be discussed in future articles.

## **HP RasterOps Videolive**

**Product description:** A workstation card that displays live, full-motion video in photorealistic color and can digitize and capture current images to main memory. The RasterOps VideoLive Card can be used alone or with other hardware and software to bring the potency of live video to workstations and provide a gateway to imaging capabilities. The card plugs into the EISA slot to display a live video window in color. The card requires HP-UX Version 8.07 or later.

ILLUSTRATION BY NEA BISEK

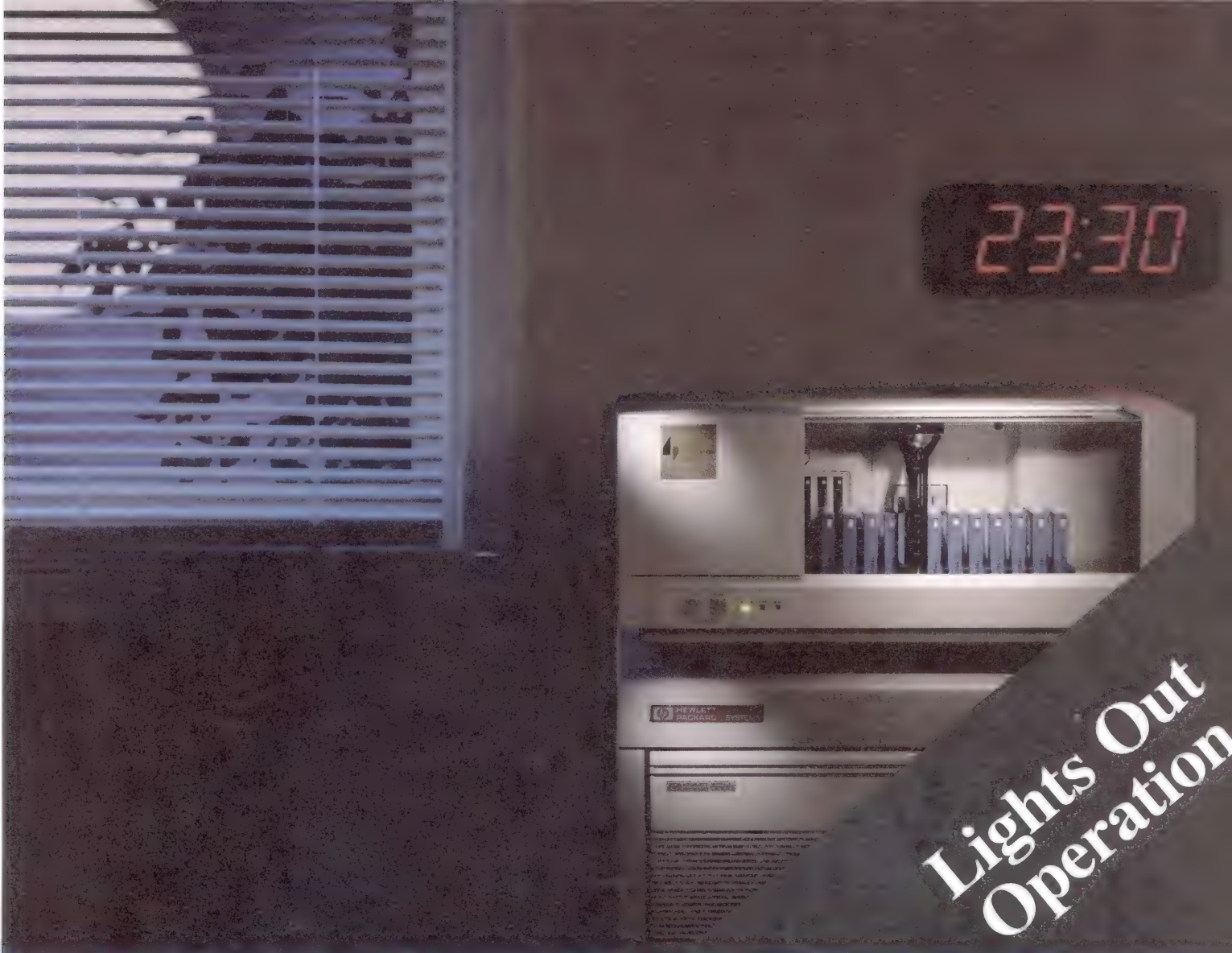




### Features and Benefits

- Full-motion, 24-bit, analog video/live video is displayed in a window.
- Maximum window size is one-fifth to one-fourth the size of the screen.
- Composite video, S-Video, or RGB cables will connect to the card.
- A variety of sources such as camcorders, VCRs, laser discs, RGB cameras, still video, and medical scanners can be used to enable the card to show video in a window.
- Multiple sources can be attached simultaneously, allowing switching between sources through software.
- The card supports NTSC, PAL, and SECAM input formats.
- The window is movable and scalable downward to one pixel.
- The card can freeze a frame on demand or at a prespecified rate, about two to seven frames per second (fps), depending on window size. Each frame can be saved to a TIFF or JPEG compressed file.
- The card can display grayscale video windows when used with black-and-white systems.
- Live video does not affect the workstation or graphics performance.





## 12 Tape Autochanger For Unattended Backup!

Herstal's DAT Autochanger provides up to 96 Gigabytes of **Unattended Backup** so you can enjoy a good night's sleep without worrying about who or what is backing up your data.

Available as an upgrade to your existing HP DDS drive, or as a subsystem containing HP's new 8 GB drive, our Autochanger is the perfect solution for your backup needs.



3171 W. Twelve Mile Road  
Berkley, MI 48072-1339, USA  
Phone: (313) 548-2001  
Fax: (313) 548-2010

CIRCLE 4 ON READER SERVICE CARD



**TABLE 1** *Supported Modems for HP 9000 Fax*

Modem	Model Number
MultiTech Systems MultiModem II	MT2248AF
Intelligent Modem	MT932BA
	MT1432BA
Everex EverFax Modem	24/96D EX0-00967-02
	24/96E EX0-00967-02

### VideoLive Applications

**Scenario 1:** Manufacturing engineers can visually evaluate a process from anywhere in the plant by sending live images of an operation directly to a workstation in a remote location. Images of out-of-control operations or defects can be captured in real time, saved to a file, and printed or sent over the network to enhance communication and corrective action.

**Scenario 2:** A video-camera-captured image of a component is reduced to a 3D "wire frame" skeleton through specialized

software developed by a telecommunications company and manipulated on screen as opposed to going through stacks of original drawings.

**Scenario 3:** Financial traders can monitor news and financial broadcasts by simply feeding the signal from any TV tuner (available on most VCRs) to the card.

**Scenario 4:** Thumbprint ID verification, for benefits recipients. A thumbprint and photo taken at the point of disbursement can be compared against a database to verify identification. This provides a high-speed approval process.

### HP 9000 FAX

**Product description :** HP-FAX 1.0 is an HP-UX (ISU) software product that allows a user to send or receive FAX transmissions electronically from Series 700 workstations configured with HP-UX Release 8.07 or 9.0.

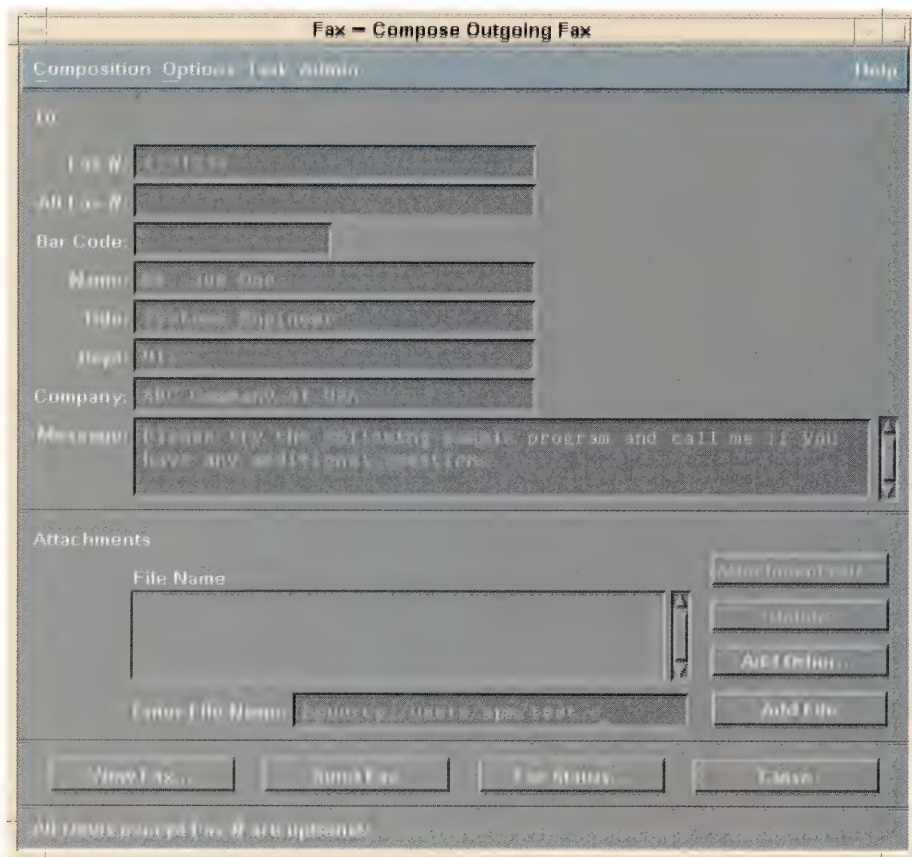
HP-FAX is based on a client-server model, enabling one fax server to handle multiple fax clients. HP-FAX will operate within the HP VUE environment using the MOTIF window style guide to provide a common look and feel and "ease of use" for the user.

The fax server will give the user notification of an incoming fax. The user will then be able to ViewFax, claim, save, retrieve, forward, delete, or print that particular fax.

This product will provide a complete and secured fax service for client workstations that are connected to a fax server via a TCP/IP-based LAN.

The problem of waiting to get access to a fax machine or someone notifying you that your fax has arrived is eliminated. Faxes sent from HP-FAX are queued before being transmitted. If HP-FAX is busy sending or receiving another fax, the fax is simply queued and automatically sent later. If the destination fax is busy, HP-FAX will automatically retry the fax transmission at a later time.

Table 1 lists fax modems that are currently supported by HP-FAX and there are plans to include more in future. Table 2 lists modem cables suitable for Series 700 Systems.





**TABLE 2** *Modem Cables for Series 700 Systems*

System	Part Number	Length
700	24542M 9F to 25M	3 meter (10 ft.)
PA RISC Upgrade	40242M 25M to 25M	5 meter (16.5 ft.)

**FAX SERVER**

The FAX Server is responsible for coordinating all client access activity on the server. The FAX Server consists of a spooler/scheduler and a Server Executive. The spooler/scheduler provides all facilities associated with modem control. The Server Executive handles all fax requests received from clients and is also responsible for automatic file conversions, user preview, control/accounting information, and server database updating.

**FAX CLIENT**

There are multiple means of accessing fax (server) capabilities from a client. The following access mechanisms are supported:

- a MOTIF client interface (the FAX Client)
- electronic mail (e-mail)\*
- UNIX lp interface\*

\*certain limited functionality/usage restrictions apply

The FAX Client configuration consists of a FAX library and utilities that allow users to profile their access to the server. Users can compose a FAX header and add attachments that incorporate images and then submit it for transmission by a MOTIF-based screen called the FAX Composer. All faxes received are listed and can be looked at through another screen called the FAX Browser.

It should be noted that the FAX Client will support remote administration of the FAX Server. HP-FAX will also be supporting its own directory services for rapid alias database support.

**Features and Benefits**

- client-server based
- incoming fax routing via barcoding and Call Station Identification (CSI)
- supports multiple attachments
- integrated image preview mode
- supports call batching

- user-specified "trunk promotion" on multiline attached systems
- alias database
- support for multiple fax modems
- integrated optional scanner and printer access using DeskScan scanner software and SharedPrint HP-UX print software
- optional PostScript to FAX conversion

**HP 9000 FAX Applications:**

**Scenario 1:** The order processing department at Company ABC receives faxes continuously throughout the day. The orders are handled by different departments in the group. Faxes are routed either by a particular barcode ID or by the originating fax number. All this is accomplished without anyone leaving the office.

**Scenario 2:** A customer calls in to get quotes from Company ABC on the new widgets. The order coordinator requests that the customer fax them the specs; the order coordinator receives the specs and saves them in a file. The coordinator e-mails the specs to a product manager for further clarification and approval. A quote is generated and the sales coordinator faxes it back to the customer with the product manager's "signature" and explanation.

**HP DeskScan/UX**

**Product description:** An HP-UX software product that enables the HP ScanJet IIC desktop color scanner on configured Series 700 workstation platforms.

**Features and Benefits**

- Support for MAXXUM-base feature set with OSF/MOTIF User Interface
- Scanning Features:
  - provides an HP-UX SCSI Driver for the ScanJet IIC color scanner
  - product can be executed from the command line
- Viewing Features:
  - sizable preview and final view windows, Width/Height/Image size display
  - renders the following types of images to windows: b/w drawing, diffusion, normal halftone, 256-level grayscale color diffusion, color drawing, colorphoto, 16 million colors
  - mirror, negative, and zoom capabilities





#### ■ Manipulating Features:

- scaling in 1 percent increments (4200 percent at 400 dpi)
- brightness and contrast adjustment controls, 1 of 200 levels
- auto exposure for brightness and contrast
- color adjustment controls for hue and saturation
- highlight and shadow adjustment controls
- tone control tools (GAMMA correction)
- monitor calibration
- Color Calibration for better WYSIWIG Scan-to-Print

#### ■ Storing Features

- TIFF 5.0 support for all image types (with compression)
- EPSF supports for color as well as grayscale and black-and-white images

#### ■ Printing Features

- support for HP PCL devices in PCL3+ and PCL5 formats, using the HP SharedPrint (Hardcopy) product

#### ■ Image Support

- uses the Image library (Version 2) and Extended File supports (EFS) products
- supports the following image file types:

<u>File Type</u>	<u>Filename</u>
<u>Extensions</u>	
TIFF	tif, TIF, tiff, TIFF
JFIF	jpg, JPG, jpeg, JPEG
GIF	gif, GIF
XBM	xbm, XBM, Xbm
XPM	xpm, XPM, pm, PM
XWD	xwd, XWD, Xwd
BMF	bf, BF, bm, BM, bmf, BMF

#### *Dependencies*

One must run HP-UX Release 8.07 or greater to install and use the DeskScan-UX software. While performing an 8.07 or 9.0 update, the Image2 (Version 2) library will be loaded for you. You will be queried on whether you would like the application print services installed. In addition, for 8.07, the Online Help system-shared library will be installed on your system. For 9.0 the

Online Help system/shared library will be part of the 9.0 base software.

There will be a SCSI 2 upgrade path for existing PC-based scanners that you would like to move to a Series 700 UNIX workstation. This upgrade will be made available for all customers and dealers using or supporting a ScanJet IIC on a PC. A one-time charge to the customer will ensure a rapid one-day turnaround with a retrofitted SCSI II scanner unit.

To upgrade your SCSI I compatible scanner call Hewlett-Packard Corvallis Telemarketing at (503) 750-3105. You will receive an upgrade price quote and instructions over the phone. DeskScan-UX is supported on HP-UX IF3 8.07 or later versions.

X Window System (Version 11 Release 4), includes MOTIF V1.1, included with HP-UX 8.07 or greater.

You can purchase either the scanner bundle (which includes a ScanJet IIC), product number C1788A, or the Interface Kit only (excludes ScanJet IIC), product number A2229A.

#### *Product/System Specifications and Standards Compliance*

- The graphical user interface uses the MOTIF style guide adheres to CCITT Group III - Class 2 compliancy



# HIGH SPEED... BIG BACKUP!



## ECHO 4951 SC Tape Backup for HP 3000, 1000 and 9000

- **High Speed 8mm Tape Backup** – faster than HP7980 tape backup
- **HP-IB♦SCSI Dual Interface** – converts to SCSI with the simple "push of a button"
- **BIG Backup** – Store up to 25GB on 8mm tape

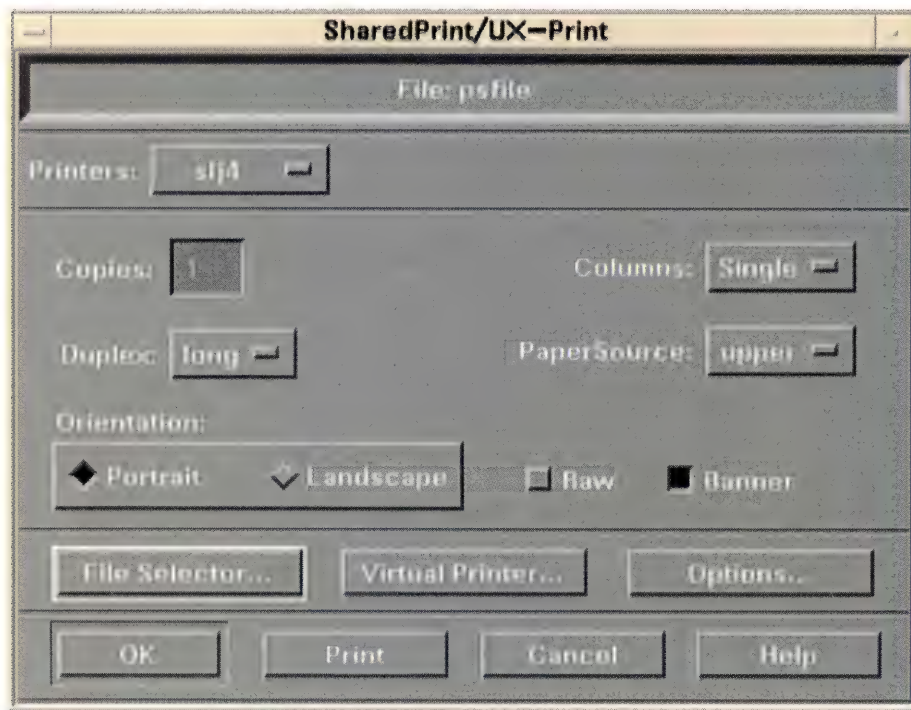
*Talk fast, talk big...talk backup. Call now for details on Bering's 8mm and DDS tape products.*

**Bering**

### Bering Technology, Inc.

1357 Dell Avenue, Campbell, California 95008 USA  
tel 800.237.4641 tel 408.379.6900 fax 408.374.8309





TIFF 5.0 image file format  
PCL3+ / PCL5 / PCL5c  
JPEG ISO "Lossy" and lossless compression for continuous tone images  
supports grayscale and RGB image types

#### DeskScan/UX Applications

**Scenario 1:** Company ABC has received a copy of their new brochure. They can review it by scanning it. The DeskScan/UX software gives them control over the operation of the scanner and enables them to set features of the scanned image such as image type, size, contrast and brightness, and intensity of the colors.

**Scenario 2:** After reviewing and modifying the scanned image, a user can print the image either in black-and-white or color or use commercially available phototypesetting services.

#### SharedPrint/UX

**Product description:** HP SharedPrint/UX is a spooler-independent printing software product created to enhance the basic printing capabilities of HP/Apollo Series 700 and 800 workstations.

HP SharedPrint primary design objectives were:

- to provide the workstation user and systems administrator with the ease-of-use features currently found on commercial desktop systems
- to provide the user with a print path from most standard file formats to a large array of HP and third-party printers and plotters
- to enhance the remote printing capabilities currently available with the lp spooler

HP SharedPrint/UX is a true client-server implementation in which the client portion of the software contains the user interface, while the print server contains the components that process the print job. The latter include file/device recognition, invoking the filters to process the print job, automatic switching between PCL and PostScript,

and spooling the print job to the printer independently of the spooling mechanism.

#### Features and Benefits

- integration with the Graphical Systems Administration Manager (SAM) for printer setup and configuration
- online, context-sensitive HELP system, thus minimizing the use of hardcopy documentation
- "drag and drop" printing by allowing a file to be dropped on the printer icon
- support of multiple print paths for increased flexibility in printing text, graphics, and compound documents to a wide variety of HP hardcopy devices
- support of a wide array of HP hardcopy devices including laser printers, color ink-jet printers, and large-format plotters
- adherence to industry-standard file formats such as PCL, PostScript, CGM, X-Window bitmaps, TIFF, etc.
- command line interface for non-HPVUE users
- Image Library support for file type conversion

# What is *your* fax machine costing *your* company?



Fax is essential. But what is the operational cost of your fax machine? *Ten times more expensive than operating VSI•FAX!* Run the numbers yourself--call us for a Fax Analysis Worksheet--the results will surprise you.

VSI•FAX is the most reliable and widely used fax software in the UNIX industry. Join the thousands of businesses that consider VSI•FAX an essential component of their image, communications, customer service and overall competitive strategy.

V-Systems, Inc. Phone: 714-545-6442 • FAX: 714-545-7653 • email: info@vsi.com

"VSI•FAX has improved our customer service and made our sales staff more efficient."  
*Dwayne Springfield, MIS, CompUSA*

"VSI•FAX paid for itself within the first month."  
*Jeffrey A. Myers, Vice President, Midland Title Security*

"VSI•FAX is an excellent product...a joy to use."  
*UNIX Review, November 1992*

"We like the way VSI•FAX easily integrates with our applications. VSI•FAX requires little or no additional training for our employees and is easily administrated."  
*Dale Burley, MIS Director, Santa Cruz Operation*



**CIRCLE 55 ON READER SERVICE CARD**

## Supported Printers

LaserJet II	LaserJet IIID	PaintJet XL
LaserJet IID	LaserJet IIISi	PaintJet XL300
LaserJet IIP	LaserJet IIIP	DesignJet
LaserJet III	PaintJet	DeskJet 500C
DeskJet		

300 dpi monochrome PostScript printers, (including LaserJet with PostScript cartridge)  
Model 250/255 monochrome electrostatic plotters  
DraftMaster MX/RX/SX (limited support)

## Supported File Types

Text	PCL 1-5	Starbase bitmaps
PostScript	PCL 3+	X Window dumps
CGM	X bitmaps	

## Dependencies

- Must run HP-UX Release 8.07 or greater.
- For MOTIF interface, must run VUE 2.1 or greater.
- For MOTIF SAM (System Administration Manager), must run HP-UX 9.0.

Note: The Hardcopy product will work with the 8.07 version of SAM, but will not be presented as a MOTIF graphical interface.

## SharedPrint/UX Applications

**Scenario 1:** A user has ported a TIFF formatted CAD drawing and by using the SharedPrint/UX graphical user interface can print the file, check the queue status, and set up printer and configuration.

**Scenario 2:** HP SharedPrint/UX can print Starbase images to either PCL- or PostScript-compatible printers and provides on-the-fly conversion between PCL and PostScript.

Finally, all the above multimedia products are available as independent products or can be delivered under one product—Mpower. For more information on MPower, please refer to the following two manuals:

- *HP MPower 1.0 Installation and Configuration*
- *HP MPower 1.0 Getting Started*

*Kaushik Mehta has been with the HP Response Center in Atlanta, Georgia for the last seven years. He has supported the HP 1000, ME 5/10, instrument control applications on HP 9000 Series 200/300, and HP 9000 system administration. His present assignment is with the HP-UX PSS/PAS team.*



# HELP!

## MY MODEM

### DOESN'T WORK

While these words aren't exactly what I hear, many users call the HP Response Centers to ask why their modems don't work on their HP-UX systems. Every day we in the Response Centers get the same question: "Why is it that the modem can be connected right out of the box to a personal computer (PC) but not to an HP 9000 system?" (My article "Configuring Terminal and Modem Ports in HP-UX" in the March 1993 issue of *hp-ux/usr* treats *getty* and *login*. I have tried to duplicate as little as possible here, so I recommend viewing the two articles as one.)

There are three reasons for having modem connection difficulties on HP-UX systems. They are modem configuration, cabling, and system configuration. Let us look at each of these.

#### Modem Configuration

Modems come fresh from the factory configured for PCs because there are far more PCs than UNIX workstations or

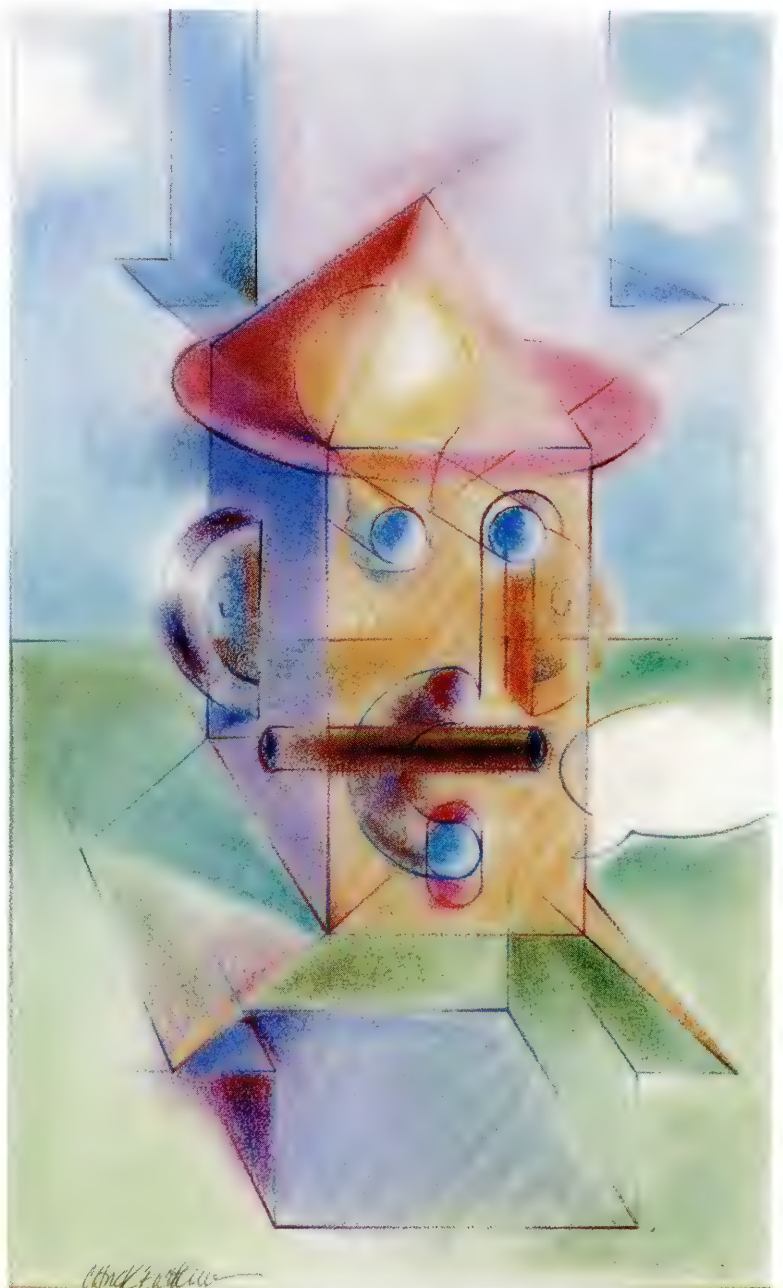


Illustration by Chuck Eichten

*by John A. Pezzano*

business systems. PC modems are used almost exclusively to connect out from the PC whereas HP 9000 modems are used mostly for dialin, sometimes for dialout, and often for both. For dialout use on a PC, an abnormal disconnect such as loss of phone connection, turning off the PC without disconnecting from the modem, or other problems are not serious. On the other hand, on a multi-user system, when a user fails to log off, it is critical that he be logged off the system and that anyone subsequently dialing in not be connected to the original user's session. In addition, unlike a PC and PC modem, which are typically powered off after each use, a multi-user system should be able to set a modem back to its default values after each use.

At a minimum, there are five active pins used to communicate with a modem. These include a line to transmit data from the modem to the computer, one to receive, a ground wire as a reference for signals, the *Data Terminal Ready* (DTR) signal, and the *Carrier Detect* (CD) signal. When modems are shipped from the factory, these last two are set for PCs. Unfortunately, these are the critical signals for HP-UX systems and must be set correctly.

### ***DTR Signal***

Modems come shipped with DTR set to be ignored. DTR is a signal provided by the computer to tell the modem that it is ready. For PCs, this signal is not necessary; when the user dials out from the PC, it obviously is ready and when the PC is powered off, there is nobody using the modem anyway. For HP-UX systems, this signal tells the modem that

- the computer is up and running when the signal is high
- the modem can now answer the line
- the modem should disconnect the line if the signal is dropped

Thus the system can indicate to the modem when it raises DTR that it is ready and a login prompt will be provided to the user.

*Continued*



Correspondingly, the signal will be dropped when

- the system is put in single user mode or is not running
- the user logs off or the user's last program terminates
- the administrator kills all the user's programs

The modem will reset to its default when the signal is dropped. Now if a user or the system dials out and the modem parameters are changed, they are changed from a known value.

### CD Signal

The *Carrier Detect* signal is provided by the modem. When modems are shipped from the factory, the default is to have the CD signal always be high, no matter what the state of the modem's carrier. For HP-UX systems, this signal should be set to be high only when there is an active connection between the two modems so the system always knows the modem state. When there is no carrier or the carrier is dropped, the system will

- know the modem port is available for dialout
- terminate all the user's processes and log the user off
- avoid sending a login prompt until there is a carrier
- drop its DTR signal momentarily to reset modem

### Other Modem Signals

There are other signals that may be used by a modem or the system. These include *Request To Send* (RTS) and *Clear To Send* (CTS), which are used to control the flow of data between the computer and the modem. These signals are designed, according to the industry standard, to control the flow of data to the modem. However, in most instances they are used as bidirectional flow control (known as hardware flow control) to prevent a sending device from transmitting data faster than the receiver can handle it, in either direction. Using these signals requires that the HP 9000 port support the signals (not all interfaces do), that this capability be supported (older versions did not or required patches), and that the signal capability be turned on. If the modem is configured to require these signals, no data will be transmitted if the signals are not there.

### Modem Speed

Modems can be run at different speeds (baud rates). HP 9000 systems support speeds up to 19,200 baud without flow control and higher only with hardware flow control. Some

interfaces are limited to 2,400 baud, some to 9,600 baud, others to 19,200, and some much higher than that. Check that the computer interface supports the baud rate you desire.

Modems can be configured to lock the computer end at a particular speed and the connecting end can then float at whatever baud rate the other modem uses. This requires the use of flow control; the modem will be taking data at one speed and passing it at a slower speed to the other end, so it must be able to tell the high-speed side to stop if its buffers are full.

Alternately, the modem can make both ends the same speed. The computer must then be told what speed to use.

### Other Features

There are other modem features that can interfere with HP-UX operation with modems. They are

- software flow control
- data compression and correction
- auto answer

Software flow control (also referred to as XON/XOFF) allows a receiving device to tell the sender that its buffer is full and the receiver must stop sending for a while. Unlike hardware flow control, these are not signals on separate pins, but in fact data characters. Software flow control data can interfere with the unix-to-unix-copy (uucp) utility as uucp was not designed to look for flow control data and will get errors if it is used. If you are planning to use uucp, either do not use software flow control or make sure that uucp turns it off when it sets up the modem for dialout.

Data compression and correction features are provided by many modems complying with various Microcom Networking Protocol (MNP) levels. Typically, newer, smarter modems will default to attempting or positively responding to MNP requests. The use of these features typically requires that the modems provide flow control to permit higher throughput with compression and allow for the delays caused by retransmissions using high reliability mode. I suggest that these features be turned off until the user gets the modems working and then turned back on with the understanding that uucp may have problems as documented above.

Surprisingly, there are those who forget that auto answer must be turned on or no system configuration will permit the modem to answer the phone call.

*Continued*

# WHAT'S

## **JMS/UX & CALLBACK/UX** *Batch job scheduling and system monitoring for UNIX.*

**T**wo of the leading data center management tools that previously were only available for MPE are now available for UNIX. Both use sophisticated X-Window functionality and appearance on standard ASCII terminals.

**CALLBACK/UX** - A combination of hardware and software to monitor your Unix system. For any event, you may be notified by pager or by a voice phone message. Use your own recorded messages or any of the pre-recorded default messages.

**Event options:**

- System hangs
- Physical conditions
- Reply pending
- Console messages
- Adverse temperature
- Job aborts
- Printer status
- User requests
- Power loss
- Special job events
- Logon security
- Stdout/stderr scan

**Additional new features:**

- Dialback capability to control multiple modem ports.
- Remote system console support.
- Monitor multiple Novell servers.

**JMS/UX** - An easy-to-use software tool that lets you control batch job scheduling on HP/UX. Like the MPE version, jobs can have flexible scheduling; job dependencies across systems; multiple queues; execution restrictions; job tracking; automated recovery; audit history; and no schedule definition language to learn. The scheduling capability of the Unix commands 'at' and 'batch' have been implemented.

Leaders in tools for the "Lights Out Environment". Call us today for a free 30 day demo. Ask us about our two newest products SPINNER/3000 and WINDOW WATCHER.



Corporate Office  
1214 Hawthorne Ave. NE  
Salem, OR 97301  
Phone: (503) 585-0512  
Fax: (503) 585-1706

Sales Office  
23272 Mill Creek Drive Suite 230  
Laguna Hills, CA 92653  
Phone: (714) 455-9725  
Fax: (714) 455-9664

European Office  
4-6 St. Andrews Rd.  
Droitwich, Worcs., England WR9 8DN  
Phone: 011 44 905 79 4646  
Fax: 011 44 905 79 4505



### Modem Lights

Not all modems have indicator lights on them but those that do can provide good indications of problems when they occur. Typically, as a minimum modems have lights for CD, DTR, *Receive Data* (RD), and *Send Data* (SD)—also known as *Transmit Data* (TD). Some have considerably more than that.

If DTR is not lit on the modem, it usually means the *getty* is not running, the cable is wrong, or the system has a problem. If CD is not lit, there is no carrier and the *getty* will not prompt. The RD and SD lights tell whether the modem is being sent data from the computer (SD) or from the other modem (RD). A good test of modem communication is to watch the RD lights when someone at the other end is hitting keys. If there is no flashing of the light, the problem is in the modems or at the other end. A summary of common modem lights and their use on an HP 9000 system is documented in Table 1.

### Programming Modems

Older modems are configured by setting switches. Most newer modems are programmed by setting parameters from the terminal or computer. Some have switches which can be overridden by programming. Those that are programmed will have a factory default setting. The customized setting can be optionally saved in non-volatile memory that will remain even if the modem loses power. Don't forget to do this.

Most modems claim "Hayes compatibility," which means that they follow the format established and copyrighted by Hayes Microcomputers, a modem manufacturer. This is the AT command set in that all commands begin with the letters AT. Being Hayes compatible does not mean that all the commands are the same as they are on a Hayes or that the commands will do the same thing. Contact your modem manufacturer, or better yet, read the manual that comes with the modem for help in configuring it. Hewlett-Packard is not responsible for providing specific modem configurations for

**TABLE 1** *Typical Modem Lights*

SD	Will flicker on for every character of data received by the modem from the computer.
RD	Will flicker for every character of data received by the modem from the other side and transmitted to the computer.
AA	Will indicate that the modem can answer the line. Requires DTR light be high when properly configured for HP 9000 systems. Also requires that modem be programmed to auto answer. Most modems default to this. User can program how many rings before modem answers.
MR	Indicates modem is ready and powered up.
RI	Flashes when phone line is ringing.
CD	Indicates there is a valid carrier between modems.
TR	Indicates the presence of the DTR signal from the computer.
HS	Indicates the modem is in high speed mode on multi-speed modems.

all modems. The *Remote Access: Users Guide* has some settings for a few modems and guidelines for others. It is the user's responsibility to program the modems properly.

### Cabling

Cabling is the second cause of problems on HP-UX systems. Unfortunately, many people think that if they use a serial cable and the connectors are right, they have the right cable. Wrong! There are numerous cables and just because the cables fit, it doesn't mean the connection will work.

Important considerations in cabling are

- male/female connections
- DCE/DTE connections
- active pin connections

#### Male/Female Connections

This ought to be obvious. Male connectors connect to female connectors. While this may confuse some users initially, eventually everyone will figure this out. The presence of mating connectors does NOT guarantee that you have the right cable. Some parallel cables use the same connectors as serial cables but are NOT compatible. Never connect a serial cable to a port marked parallel.

#### DCE/DTE Connections

There are two type of devices, *Data Terminal Equipment* (DTE) and *Data Communications Equipment* (DCE). The former includes computer systems, PCs, terminals, and printers. The latter includes modems. When connecting between a DCE and a DTE, a straight-through cable is used. When connecting between two DTEs, a modem eliminator cable (also known as null modem cable) is used. For two DCEs, generally a custom cable is required as many DCEs assume that only one side is providing certain signals.

HP 9000 systems come in all flavors. Some interfaces act like DTEs, some like DCEs, some like either, and some act like

**TIM HEFLIN**  
*Manager, End-User Services*  
**Microsoft, Inc.**

*Network Topology: Ethernet*  
*Networking Protocol: TCP/IP*  
*Host: DEC VAX*



# “DynaComm® is Microsoft’s choice for terminal emulation.”

## It should be yours.

Evaluating terminal emulation software? Consider the one that Microsoft chose for communicating across their world-wide network. FutureSoft’s DynaComm for Windows™ offers a single solution for PCs communicating across multi-platform networks to host computers.

DynaComm features:

- 16 Terminal emulation types for UNIX, DEC, Hewlett-Packard, IBM, and Data General systems

- 19 Network interfaces including TCP/IP and IPX
- Powerful development tools for creating GUI front ends to host applications

Call for a free demo disk  
**800-989-8908**

 **FutureSoft.**

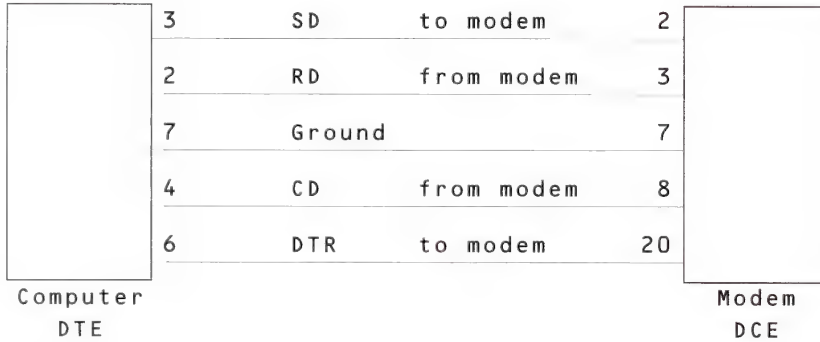


12012 Wickchester Lane, Suite 600  
Houston, Texas 77079-1222 USA  
713.496.9400 • 713.496.1090 FAX  
800.989.8908 Sales (USA)

Windows is a trademark of Microsoft Corporation. Microsoft is a registered trademark of Microsoft Corporation. DynaComm and FutureSoft are registered trademarks of Future Soft Engineering, Inc.

**CIRCLE 70 ON READER SERVICE CARD**



**FIGURE 1** *Series 800 to Modem Connections***FIGURE 2** *DTE to Modem Connections*

DCEs but do not use standard cabling. The Series 800 Business Servers look like DCEs except that not all signals are in a standard location.

Series 800 Business Servers have an unusual wiring scheme on their multiplexer ports and this oddity is one of the principal reasons why customers have problems connecting to them. HP provides the 92219Q and 40233A cables to convert the interface so that it looks like a DTE to the modem. These cables are not bidirectional and customers who fabricate their own versions of them should clearly indicate which end is which. The HP-provided cables are marked at each end. The 92219Q cable will work in most cases except with the newer modem card when certain modems are used. Since the 40233A cable is compatible with *all* Series 800s, it is the recommended modem cable. The

basic signals (excluding hardware flow control) of a 92219Q/40233A cable are shown in Figure 1.

### Active Pins

The only active pins required without hardware flow control are the five described earlier. They are shown in Figure 2.

### System Configuration

The system must be properly configured for modems. The requirements for modems to work properly include

- modem device files
- getty setup
- UUCP file setup

### Modem Device Files

Modem Device Files are required for proper operation. There are two types of modem devices, those for callin and those for callout. Callin devices are of the form `/dev/ttydxxx` where the `d` is the traditional character used for dialin devices. There is nothing significant about the name and the only reason for using this convention is for simplicity and to avoid confusion. Callout devices are of the form `/dev/culxxx`.

The *getty* (login program) is used with the callin device file. Use of this device file for any callout activity such as the *cu* (call unix) or *kermid* programs will likely result in failure to work properly and a port hung until reboot.

The callout device file should be used for *uucp* and *kermid*.

Unlike other systems, HP-UX can handle calling out even when a *getty* is waiting on a modem line, provided the right device files are used. Therefore, unlike other systems, *getty* rather than *uugetty* can be used on modem ports.

### Getty Setup

The *getty* program should be set up with the `-h` option and with the specified baud rate. Note that the HP default is to use 7 bits, even parity on dialin ports. If the modem is set up

## Managing a UNIX Enterprise Can Be Simple.

Holland House/API International focuses on enterprise management with simple, straight-forward solutions. Single point control of all computer resources, data communications devices, printing and data access is now a reality.

### Enterprise Print Management

UNISPOOL, the premier network printing solution, has been expanded and enhanced with UNISPOOL/COMMANDER. This module of UNISPOOL monitors and controls all printers in an enterprise network. This lets operations staff manage a network of print devices and attached servers from a single MS Windows PC. UNISPOOL/COMMANDER displays all systems and printers connected to a network as a diagram of icons. System administrators zoom-in on each icon to view that device's status or make changes to its configuration. In addition to delivering central control of all print resources, UNISPOOL offers the option of letting all users with PC's manage their own print files. UNISPOOL opens up the printing environment letting legacy technology and newer systems work in harmony, while being transparent to the users. UNISPOOL provides bi-directional printing in multi-vendor environments between HP3000's, HP9000's, Apollo DOMAIN, IBM AIX, DEC ULTRIX, SCO UNIX, MS LAN Manager and Novell.

### Enterprise Management of Distributed Systems

VANTAGE 2.0 is a resource monitor and control system that delivers worldwide enterprise management from coordinated, single-footprint consoles for all your data communications devices, PC servers, midrange systems... virtually any device with management ports conforming to RS-232C protocol. The software listens in on data traffic between systems and consoles, using an exclusive serial access hardware device to route multiple consoles' message to a central HP workstation screen. Companies with geographically dispersed systems can request datacenter control for remote sites. This VANTAGE- to-VANTAGE capability permits a single operator in North America, for example, to monitor and control many systems located in Europe after regular business hours. VANTAGE users work with a polyConsole on an HP9000 Series 700 workstation, tapping console data streams from any device connected to a serial port or network. No software is installed on such managed systems. Instead, unique Console Access Technology (CAT) connectors tap into console or management ports, giving VANTAGE a listening post on traffic between systems and their consoles. VANTAGE gives companies the power to build enterprise-wide automation. Their central data command center can follow-the-sun to keep mission-critical systems and resources completely operational. VANTAGE responds to events by sending user-defined scripts, commands or command files or Application Programming Interface files to systems. VANTAGE will send alert boxes to local operations staff and request replies. Restart, reboot, shutdown and power off systems either locally or remotely. Remotely dial in to VANTAGE and shutdown any resource connected to it from any PC or palmtop with a modem. Go beyond SNMP agents and be the console. It's better than being there!

### Enterprise Data Access

FACES 4.0 gives developers a simple way to add a common Windows interface to any application without changing any source code. Users can access and update multiple applications from differing systems on a single screen once a FACES front-end is in place. Most screen builders walk you through the laborious task of building a Windows interface for applications, but FACES builds them automatically, then attaches itself to applications to let you hot-link to data in them. FACES also goes beyond standard interface builders by attaching directly to databases on both hosts and clients. The 4.0 version will connect to data stored in any ODBC-compatible database, including Oracle, Sybase and Microsoft's SQL for Servers. The automatic screen builder will build interfaces from these data structures - or give developers the option of adding fields from those databases to an existing FACES front-end interface. Integrated reports from multiple applications can be as easy as clicking the mouse. FACES lets you change the user interface, not the data structures or systems.

### Automated UNIX Systems Management

GENSYS reduces the need for dedicated staff to monitor system activities, watching for conditions that will cause problems in a systems environment. GENSYS monitoring goes beyond datacenter or network activities to track the execution of applications. When a user-defined event occurs, GENSYS can send messages to operations staff or MIS personnel via electronic mail, text pagers, voice, or datacomm transmissions to remote PC's, terminals or printers. GENSYS adds a level of exception management and automation for the other scenarios in your network. It can be set up to monitor databases like Oracle and Image, performance tools, printers and accomplish system management on a polled basis. GENSYS is a decision support tool with automation capabilities, preempting problems to maintain system and network reliability.



**Call 1-800-5API USA**

P.O.Box 91027  
Austin, TX 78709  
Fax: (512) 280-0309





**TABLE 2** *Some Simple Tests*

ACTION	TEST OBJECTIVE
Check to make sure there is a <i>getty</i> on the port.	The <i>getty</i> provides the DTR signal and the login prompt
Check to make sure that there is a ? in the TTY column of the <i>getty</i> process when doing a 'ps -ef'.	A terminal name instead of a ? means that CD is present or the port is not configured as a dialin port.
Have someone connect but not logon. The ? should change to the name of the tty.	The presence of a terminal name means the computer has seen the CD signal.
Terminate the <i>getty</i> process with the kill command. The user should be disconnected. User should also be disconnected if the cable is disconnected at either end.	The DTR will drop and the modem should reset, disconnecting the user.
Have the person connect again while someone is watching the RD and SD lights. The one logging in should see a login prompt and the observer should see activity on the SD light momentarily as the <i>getty</i> sends its prompt.	No lights mean that the <i>getty</i> is not sending a login, the cable is miswired or the modem does not detect the data.
Have the person logging in hit some keys on their terminal or PC. The observer should see the RD light flicker for each key.	The modem should see data from the other end. No data means that there is a problem in the modems.

properly, the presence of the *getty* program will raise DTR and the TR light will be lit. Killing the *getty* program will result in the TR light going out momentarily, then returning as the system respawns a new *getty*.

If you do a 'ps -ef' command, you will see that the *getty* program on modem ports will have a question mark in the TTY column of the output. The lack of a ? when there is no user dialed in indicates the lack of proper modem settings, as described above, or the wrong cable. As soon as a connection is made, and before the user logs in, the *getty* will show the port name rather than the ? in the tty column. The presence of the CD signal causes this change.

The *getty* should be set at the desired baud rate. If you wish to have both ends of the modem set at the same speed, set the *getty* to use the most common speed expected. If the

modem speed is fixed at the computer end, set the *getty* to run at that speed.

### UUCP File Setup

UUCP files must be properly set up to use the cu and uucp programs. A discussion of uucp will be left for another time. However, many people with uucp problems on HP-UX systems will find that the failure to set up the modem, cable, and *getty* properly causes most initial and some later uucp problems.

### Testing the Configuration

There are a number of tests that, while they will not guarantee that the configuration is correct, will at least eliminate the obvious misconfigurations. Table 2 lists some simple tests.

### Conclusion

Just because a modem can dial out doesn't mean it can dial in, and vice versa. Two wrong setups may make the modem work in some circumstances, but there will be problems. The right modem configuration, the right cable, and the right system configuration are all necessary to make modems operate correctly. As a coworker has said, "There

are a lot of ways to make modems work on HP-UX systems. There is only one way to make them work right." By understanding how modems communicate with HP-UX systems, by reading and understanding the *Remote Access: User's Guide*, and by understanding HP-UX modem configuration, proper setup isn't all that difficult. ■

*John A. Pezzano is an HP Response Center Engineer in Atlanta, Georgia. Before moving to Atlanta, he spent seven years as an SE in the HP office in El Paso, Texas, supporting HP-UX systems.*

## NOW THERE'S A NETWORKED SYSTEMS MANAGEMENT SOLUTION FOR UNIX THAT WASN'T BORN YESTERDAY

**U**NIX as a commercial data processing environment is still in its infancy. But that doesn't mean you have to settle for UNIX systems management tools that aren't grown up.

Unison-Tymlabs is pleased to announce Maestro for UNIX, the first full-featured batch job scheduling and workload management solution for UNIX systems. Maestro has been solving batch job management problems in demanding HP 3000 commercial environments since 1986, and is currently installed on thousands of systems worldwide.

Maestro for UNIX enables systems managers or administrators to automate network job scheduling, tracking, and monitoring to increase throughput and reduce processing errors. It can schedule jobs anywhere on your network according to customized business calendars, in addition to date, day of the week, and time.

You can make job initiation dependent on the successful completion of other jobs, the existence of needed files, user response to a prompt, or the availability of hardware or data resources. The Maestro master console on the server provides a single interface for all monitoring and control.

### MAESTRO—NOW ON UNIX

Maestro runs in AIX, HP-UX, Sun Solaris, NCR, and HP-MPE environments, and on heterogeneous networks.

Maestro for UNIX treats your batch job scheduling and workload management as more than just child's play. Call us today for a complimentary demonstration copy or more information.



YOUR OPERATIONS  
MANAGEMENT PARTNERS

HEADQUARTERS: 408/245-3000, Fax 408/245-1412

TYMLABS DIVISION: 512/478-0611, Fax 512/479-0735

EUROPEAN HEADQUARTERS: +44 (0)582 462424,

Fax +44 (0)582 462425

**CIRCLE 68 ON READER SERVICE CARD**



# UNIX Panic? Don't Panic!

**UNIX** uses the colorful term “panic” to designate an operating system failure inside the computer. It might also describe what happens to us outside the computer. Our tolerance of computer crashes is lower than ever.

Since porting UNIX and developing HP-UX, HP has improved system reliability with hundreds of fixes that prevent panics. These fixes are possible because of diagnostic data gathered from failures. The same diagnostic data from your system's failure can help HP provide you with a fix.

What should you do if your HP 9000 has a UNIX panic or some other kind of “crash”? Can you gather the right diagnostic information, or is it more important just to get the



*by Dennis McClure*

system back up and running? You can do both, if you are prepared. None of it is by default, but it is easy when you know what to do.

This article discusses coredumps that happen automatically, and how to get one manually. It will discuss the tricky life cycle of a core-dump, from being written originally in the swap area, to being saved in a part of your file system, where it may take up considerable disk space. It will describe the tools used by Response Center engineers to determine the faults and find a fix for the problem.

Coredumps can be helpful in pinpointing hardware errors. The article will cover additional specific procedures for failures in PA-RISC systems.

These functions can be done quickly and calmly in the event of a panic, proving invaluable to the system administrator.

### **Panic!**

Could it be that the HP-UX kernel panics because it does not know what else to do? Yes, although it would be more accurate to say that it panics because there is no better choice. Suppose the kernel has just detected an illogical condition, which the original programmer thinks should never happen. Something is very seriously wrong. The extent of the wrong condition probably goes beyond whatever the kernel detected. Rather than risk writing corrupted data, it is preferable just to stop abruptly. Also, the likelihood of getting a fault fixed is greater if the system stops and provides a diagnostic coredump.

### **Writing a Coredump**

An HP-UX panic is one of three events in which a coredump is written, and signifies that software detected something wrong. The fault can

be in either software or hardware. A second source of coredumps is an HPMC or High Priority Machine Check, on an HP 9000/700 or 800. In this case, the “machine,” or hardware, detects the fault, which is always a fault in the hardware. The third source of coredumps is the operator, who can initiate a transfer of control (TOC). A TOC transfers control from the kernel, which is presumably hung, to the hardware’s on-board code, which performs the correct series of events for a hang: dump memory, reset hardware, and reboot. TOCs are performed differently on different models of HP 9000s.

Most newer 800s, including all the 8x7s, can perform a TOC from the console. Press <control>b, get a CM> prompt, and enter TC. If there is no response to the <control>b, you may have a model with a front panel on which you must first enable the access port or “unlock” the console. This can be done by a keyswitch or a button, depending on the model. Other older 800s have a keyswitch on which the farthest clockwise position is a TOC. This position is labeled “TC” or “reset.” Refer to the owner’s manual for your particular model.

*Continued*



Current 700s have a button for this purpose, labeled TOC, TC, or RESET. The 300s and 400s do not have a TOC capability, in spite of the reset button on 400s. It just does a reset/reboot. Getting a manual dump on a 300 or 400 requires debug mode.

### ***Where Is the Dump Written?***

Unless the dump is directed to a specific device, coredumps are written to primary swap. This means the swap space on your root disk, or the swap space that was compiled into the kernel. The swap space is available for writing a coredump at the time of the crash because the swap data there will no longer be needed. On the other hand, sometime after the system reboots, the swap space will be needed again for swapping. Most users prefer letting swap space do double duty as the dump area, but some flexibility is possible.

On 800s, you can direct dumps to a specific hard partition or logical volume using the “dumps on ...” statement. It is used the same way as “swap on ...” in the S800 file. As of 9.0, you can use multiple areas for dumps. See *System Administration Tasks*, Chapter 7, pp. 42-45, for this and other details.

On 700s, you can use the dump statement in the dfile to specify an alternate dump device. Unfortunately, it must be an entire disk, without a file system on it. On the other hand, you can use the swap statement in the dfile to specify that the primary swap space is on a certain disk, and you can specify whether or not that swap space follows a file system. This indirectly puts dumps on the alternate device. With this approach, the minimum disk environment for operation is two disks, the root disk and the primary swap disk. For protection, you

might configure */SYSBACKUP* to use default swap and dump. See *System Administration Tasks*, Chapter 7, p. 16.

On 300s and 400s, the dump area defaults to primary swap, as on other 9000s. No flexibility for redirecting the dump area is documented. However, the kernel code for swap and dump is the same as on 700s, so the above techniques may be used.

### ***Where Does the Dump Go After Rebooting?***

During the reboot, the */etc/rc* script performs a savecore routine. It is conditional; it runs automatically only if a directory exists called */tmp/syscore*. Savecore checks to see if the dumps area has a dump in it. If so, savecore copies the dump to */tmp/syscore*. This directory is not provided by HP by default, and some users have been unhappy about that. One good reason is that the saving of a coredump can be a serious drain on available disk space. I like the fact that we don't fill up the file system without the system administrator's knowledge of the liability.

The coredump itself will be in a file called *hp-core.0*. It will be a copy of everything in memory at the time of the crash. The file *hp-ux.0* will be a copy of the kernel that was executing at the time. Another file, *bounds*, keeps track of the numeric suffix that was used, so the next set of files will have “1” for a suffix.

The savecore program also writes an entry in the */usr/adm/shutdownlog* file, telling the reason for the crash, which it cleverly obtains from the kernel message buffer in the dump.

### ***Is Disk Space Available?***

The coredump file, *hp-core.0*, will be the size of main memory. The *hp-ux.0* file will be about 2 MB. The *bounds* file is 1 byte. If disk space is limited at either step—in the dump area when the dump is first written, or in the file system when the dump is being saved—the files will truncate. Although partial coredumps are often criticized, they are usually sufficient to characterize what went wrong, and to match with known problems. A truncated dump is insufficient in two problem areas: new problems and system hangs. In either of these situations, it may be necessary to follow pointers into areas of the dump that are missing.

### ***What If I Crashed and /tmp/syscore Does Not Exist?***

The dump will not be saved automatically, but there is still a good chance to save it manually if you act quickly. In a few situations, possibly with lots of swap space available, and not much need to do swapping, I have saved dumps manually up to a couple of hours after the reboot. The steps are:

```
log in as root
```

```
# mkdir /tmp/syscore
# savecore /tmp/syscore
```

### ***Can I use a different file system than /?***

The output from savecore goes to the directory name that is used as a parameter in its execution. If you are running savecore manually, just direct the output to whatever

# ATTENTION NOVELL USERS



Only one HP terminal emulator combines ODI compliance with Telnet and NS virtual terminal connectivity for Windows and DOS environments, MiniSoft 92 offering one package for one price, \$159.00.

## MINISOFT

13617 State Highway 9  
Snohomish WA 98290  
**800/682-0200**

CIRCLE 94 ON READER SERVICE CARD

HP9122C HP9153C Replacements

## ISA Floppy Disk Family



### ISA 1015

(HP9122C Compatible)  
3.5 inch dual  
HP-IB SS/80

**New Price: \$1,300**

### ISA 2025

(HP9153C Compatible)  
40MB with 3.5 inch single  
HP-IB CS/80 SS/80

### ISA 1060

5.25 inch single  
HP-IB SS/80

### ISA 1015S (NEW SCSI)

3.5 inch  
single  
(HP internal FD compatible)  
SCSI-for HP9000 300/400/  
700/800

**New Price: \$950**

### ISA 1060S (NEW SCSI)

5.25 inch single  
SCSI-for HP9000 300/400/  
700/800

• Memory Card • I/F Card • Floppy • Hard Disk • MO Disk • QIC Tape • DAT •

**ISA, the Largest HP Enhancements Manufacturer**

**HEAD OFFICE:** ISA CO., LTD. Japan, Sunrise Shinjuku Bldg, 2-4-15 Okubo, Shinjuku-Ku,  
Tokyo 169 Japan Tel: 03-3208-1150 Fax: 03-3208-1335



<b>USA:</b>	Texas ISA, Inc:	Tel: 713-493-9925	Fax: 713-493-2724
<b>S.E. ASIA:</b>	ISAHK CO., LTD:	Tel: 330-1977	Fax: 330-1077
<b>EUROPE:</b>	EURISA SARL:	Tel: 1-48-61-48-95	Fax: 1-48-61-49-06

CIRCLE 22 ON READER SERVICE CARD



directory you want to use. We do not recommend changing the directory name in the */etc/rc* script, however, because this change will be a nuisance to remember and to duplicate when getting a new version of HP-UX. It is easier to leave */etc/rc* as provided, but create */tmp/syscore* as a symbolic link to the desired disk. For example:

```
# rmdir /tmp/syscore
# mkdir /otherdisk/syscore
# ln -s /otherdisk/syscore /tmp/syscore
```

All references to */tmp/syscore* will work OK, but will take place on */otherdisk/syscore*.

It is also possible to run *savecore* with tape output, using the *-t* option. The dump cannot be analyzed unless it is put back on a disk, but this option does allow saving the dump even if no disk space is available. The tape option is available on HP-UX versions 8.06, 8.07, 9.0, and later.

```
# savecore -t /dev/rmt/0m /dummy-directory-parameter
```

To read the dump back in from tape:

```
# savecore -x -t /dev/rmt/0m /destination-directory
```

### Other *savecore* Options

In HP-UX 9.0, a number of changes were made. *Savecore* will check for enough disk space before saving the dump, and will skip saving the dump rather than write a partial file. The *-p* option will allow it to save as much as fits, as it used to do. You can reserve space in the destination directory using a file called "minfree." On 800s, the *-i* and *-k* options let you save only the most "important" parts of the dump. See the *man* pages for these and other options that might be useful in special circumstances.

### What About Diskless Clients?

A truly diskless client is a problem for the dump facility, since dumps are written without depending on much intelligence left in the system. The system is crashing at this time, after all. This rules out the use of network software to write the dump on a remote disk drive. Only a "diskless" client that has a local disk for swapping can write a dump. Sometimes if a troublesome situation persists on a client, a local swap disk can be added temporarily to capture a dump.

### Reading the Dump

Once the dump is safely copied to a file system, what information can you get from it? At this point, I recommend calling for help from the HP Response Center. The steps to obtain information are not difficult, but the interpretation may depend on specialized experience or HP's accumulated data.

### Panic Message

The first objective is to see an accurate and complete copy of the messages that occurred in the crash. The messages may not have been successfully displayed on the

console, or they may not have been observed or recorded by the operator. The following commands will run *adb* and display the entire kernel message buffer.

cd to the directory with the dump files

On 700s and 800s:

```
# adb -k hp-ux.0 hp-core.0
msgbuf+8/s
```

On 300/400s:

```
# adb hp-ux.0 hp-core.0
Msgbuf+8/s
```

On either, to terminate, enter *\$q*.

This is not user-friendly software. Notice that 700s and 800s need a *-k* parameter, and 300/400s use an upper-case M. After executing *adb*, you may or may not get a line of output that looks like gibberish (but is not). In either case, without waiting for any kind of prompt, enter the message buffer command.

The output will look like what you get from a *dmesg* command on a running system. It is a circular buffer of a fixed size, causing the space to be reused if necessary. Unless there have been a lot of error messages, you will see every kernel message from booting to panicking and dumping. After boot messages and before dump messages, there will likely be a couple of lines about the panic, including a set of words telling what type of panic it was.

### Stack Trace

Of all the numbers, the most useful are the ones following "stack trace." The stack trace addresses may be entered interactively in *adb* one by one, and the

output from each will be the name of the software routine at that address. It will constitute a list of nested procedure calls, in reverse chronological order. See the example below.

### Interpretation

The HP Response Center is your best source of information about the things you can see in the dump. You might also search the HP SupportLine database and patches. Sometimes the interpretation will be possible to guess. Here is an example from a 700 (the size of the output has been trimmed significantly):

```
#adb -k hp-ux.0 hp-core.0
u 7FFE6000 u.u_procp 4565D8
msgbuf+8/s
SCSI: bus timeout - bus = 0x1
SCSI: humoring - bus = 0x1, tgt = 0x6, sbcl = 0x22, spc = 0x928
SCSI: dev: 7201600
      cdb: 28 00 00 20 fa 48 00 00 18 00
      opcode: (28) Read (10)
      status: (400) None -- Incomplete

      Retry count exceeded!
B2352A HP-UX (A.09.01) #3: Fri Dec 18 09:16:31 MST 1992
panic: (display==0xbf00, flags==0x0) pageiodone: B_ERROR set in buffer
PC-Offset Stack Trace (read across, most recent is 1st):
  0x00125e38 0x0018cda0 0x00191a2c 0x0019148c 0x0013f95c 0x0013eb34
  0x0013e500 0x0013e040 0x001135f8 0x000b35d0 0x00025570
End Of Stack
...
0x125e38
panic+40:
0x18cda0
devswap_pagein+804:
$q
#
```

Note in the SCSI error that the “tgt=0x6” indicates the device at SCSI target address 6. The device is also identified with the number “7201600,” which is a combination of the major and minor numbers. The panic message indicates an IO error. The stack trace shows that “panic” was called by “devswap\_pagein.” Based on this dump, you would correctly guess there was a hardware fault while swapping from the disk at address 6. There are usually some subtleties that are not shown, such as whether the

fault is on the disk mech, disk controller, SCSI interface, etc., but at least you are on the right track.

One category of panics you can deal with yourself is file system corruption. One of the most common is “panic: free: freeing free frag.” This means that the HP-UX routine “free” was called to change the status of a fragment of disk space from “in use” to “free,” but the routine found that the frag was already marked free. At the first sign of such illogical trouble, HP-UX will panic rather than risk further corruption. There are a variety of other file system faults, often involving the term “inode”

or an abbreviation starting with “i,” like “ialloc: dup alloc.” An inode was being allocated, and was found to be a duplicate of one already there. File system panics usually have a line of information showing the device address, block number, and the name of the file system.

File system corruption will be fixed by fsck, and there is nothing further to do about it unless it recurs. Recurring file system corruption can be a sign of disk faults. Corruption is also a normal part of any abrupt stop, like a crash or shutting off the power without a shutdown. We depend on fsck to detect and fix things that are wrong. Choosing not to fix something in fsck, by answering “no” to its prompt, is to risk panicking over the fault later.

### Dumps Other Than Panics

In a hang or TOC dump, the above technique will not yield good results, unless some coincidental kernel messages have to do with the fault. Likewise, an HPMC dump may have nothing in the message buffer to indicate what happened. A true analysis of the dump is required, using “analyze,” HP’s dump analysis software. Until recently, this software was not included with customer software distribution.

*Continued*



Response Center engineers have had to ask for the dump to be sent in on tape, using a tar relative backup:

```
# cd /tmp/syscore
# tar cvf /dev/rmt/0m hp-ux.0 hp-core.0
```

As of 9.0, on 800s only, HP distributes a version of analyze called `/usr/contrib/bin/scancore`. With a dial-in modem, this makes it possible for a Response Center engineer to check out a dump without the delay of shipping a tape. In time, this capability may be available on 700s as well. As indicated by the directory, we do not provide support for you to use it independently. Note that `scancore` does not have all of `analyze`'s features, so shipping a dump may still be necessary if `scancore`'s output is inconclusive.

### Hangs

A dump of a system hang is one of the most difficult dumps to solve. It requires a meticulous analysis of every process on the system, so a full dump is needed. In some cases, multiple TOC dumps are needed to establish patterns between the hangs. As in all cases, your help in describing the circumstances of the dump and helping to isolate the problem will mean faster resolution.

### HPMC

A dump of an HPMC can be easy, since the information needed is a concise list of register values. From these values, a Response Center engineer or a customer engineer (CE) can determine the failed component. The problem is that certain HPMCs use two registers that are not shown in `analyze/scancore` output. For that type of HPMC it is necessary to go to the system itself for the data. It is stored in processor independent memory (pim). To display pim, initiate a reboot and interrupt it.

On 800s:

```
Boot from primary? no
Boot from alternate? no
Enter command: pim
```

On 700s:

From the menu, select "a" for boot admin

Enter "pim\_info"

The display will include a massive amount of data that is not needed for our purposes, and a few registers that are important. The following is an example of the pertinent part of the display on an 8x7:

IIA Space	= 0x0000000a
IIA Offset	= 0x00b81b10
Check Type	= 0x20000000
CPU State	= 0x9e000004
Cache Check	= 0x00000000
TLB Check	= 0x00000000
Bus Check	= 0x00310000
Assists Check	= 0x00000000
Assist State	= 0x00000000
System Responder Address	= 0xffffb5000
System Requestor Address	= 0xffffbe000
Path Info	= 0x00000000
Viper Status Register	= 0x00000102

This information should then be reported for interpretation by the Response Center or a CE.

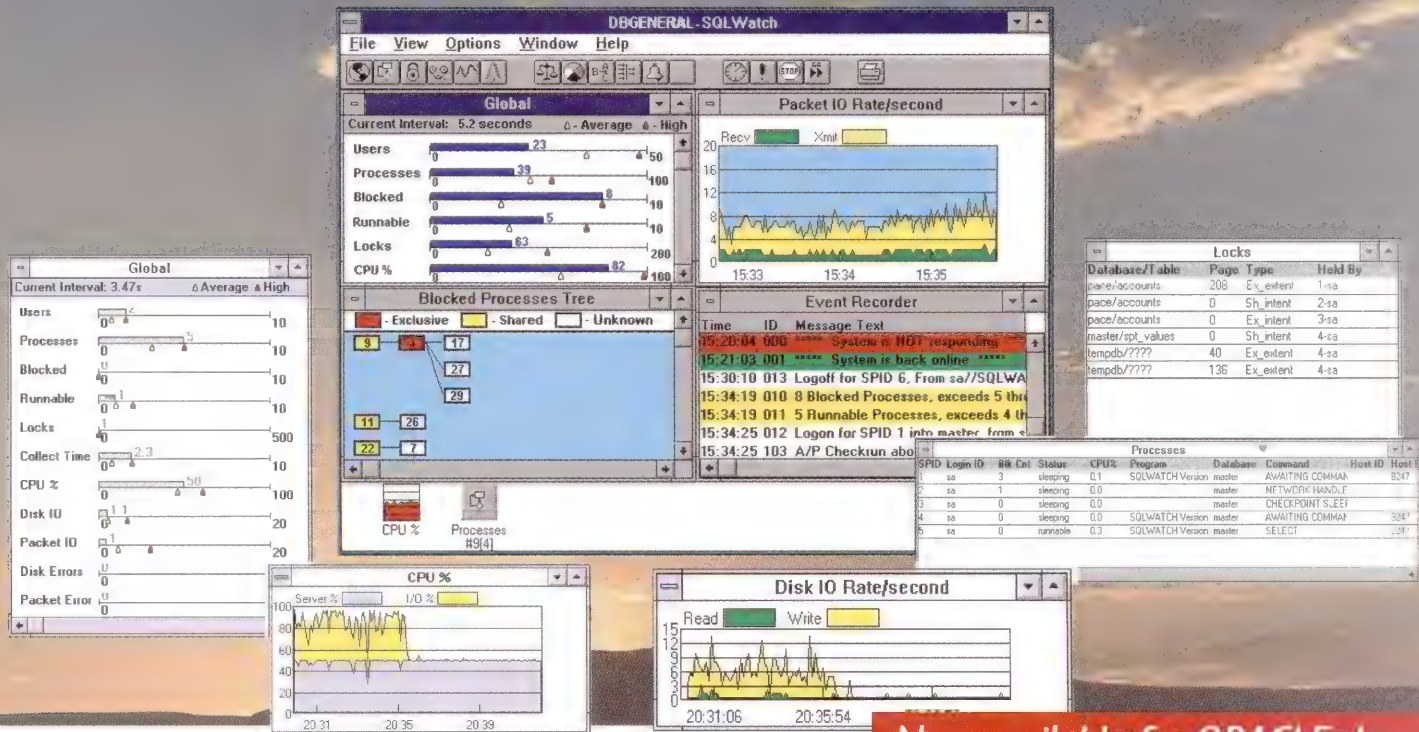
### Conclusion

It is bad enough when your system crashes once. It is too much to expect that it might have to crash additional times just to get the right diagnostics. With the above information and a bit of planning, it will be possible to capture, retain, and analyze a coredump the first time. Then, at least, you gain some control over the bad event, and have a chance to prevent its recurrence. ■

---

*Dennis McClure is a Response Center engineer in Atlanta, Georgia, where he has provided help on down systems since 1984. He was a founding member of the HP 3000 System Interrupt Team, and is now working on HP 9000s.*

# Have you seen DBGGENERAL lately?



Now available for ORACLE™!

## SQL Server performance data never looked so good!

Introducing DBGGENERAL's SQLWatch™ option, available for SYBASE, the first product to bring mainframe database performance monitoring to the Client-Server environment. SQLWatch gives you power-packed features:



### Easy-to-understand graphs and lists.

Stop struggling with text screens (sp\_monitor, sp\_who and sp\_lock), and monitor critical SQL Server resources all from one screen — and in **real time**. Since SQLWatch runs under Windows™ 3.0 (or above), you can monitor your SQL Server right from your desktop.

**Analysis tools.** Along with a better presentation of SQL Server statistics, you get the tools you need to analyze concurrent problems, like our Block Processes Tree, and the ability to sort and filter process data in practically every way possible.

**The Event Recorder.** This feature continually monitors the status of your SQL Server (in background, if you prefer) and records user-defined events.

**Additional features,** like the 8 animated graphs, the user-configurable display option, and many others too numerous to describe here.

Call today to get your **FREE** 30-day evaluation kit. It includes a functional copy of our Single Server/Single Client software and User guide.

So put SQLWatch to work for you today. Because what you can't see can hurt you!



1-800-ASK-BRAD



**BRADMARK**  
Technologies, Inc.

CIRCLE 90 ON READER SERVICE CARD



# HP-UX Systems Administration

by Chris Curtin

## comp.sys.hp Update

THIS TIME I am going to cover lots of small subjects that are usually not large enough to dedicate an entire column to. I will update you on the comp.sys.hp newsgroup reorganization, and discuss configuring dialup passwords for your modems and adding high-speed modems to your Series 800. Finally, I'll take a quick look at the new HP ENVIZEX X terminals.

### **comp.sys.hp Reorganization**

Last time I mentioned that there was a move to reorganize the comp.sys.hp Usenet newsgroup into more specific groups dealing with HP-UX, MPE, and hardware. After two months of discussions five new groups were proposed under the existing comp.sys.hp hierarchy. They are:

- comp.sys.hp.hardware
- comp.sys.hp.apps
- comp.sys.hp.hpux
- comp.sys.hp.mpe
- comp.sys.hp.misc

comp.sys.hp.hardware is for discussions of Hewlett-Packard hardware. This group is for questions and discussions about any hardware marketed by HP. This includes X terminals, printers, instruments, 9000s, 3000s, 1000s, HP-85s, etc.

The only exception is HP calculators. These have their own group called comp.sys.hp48.

comp.sys.hp.apps is for discussions and questions about any applications or software that runs on any HP platform. This group covers applications that are not specific to the HP-UX or MPE operating system. Applications that run on multiple system types or run across multiple system types are also discussed here.

comp.sys.hp.hpux is for discussions and questions about HP-UX. This

includes systems administration questions, application development questions, and any other issues pertaining to the HP-UX operating system. This includes HP-UX specification applications and solutions.

comp.sys.hp.mpe is for discussions and questions about the MPE operating system. This includes systems administration questions and applications specific to the MPE operating system.

comp.sys.hp.misc is a catch-all for anything else not covered by the other groups. This is where political discussions about HP are held. (For those new to comp.sys.hp.\* : there was a huge thread about HP's management and the good/bad things they did. This wasted a lot of bandwidth and made it difficult to read the group. comp.sys.hp.misc will remove these types of discussions from the technical newsgroups.) comp.sys.hp.misc also will have HP product announcements posted monthly.

After a discussion period a request for votes was issued and on October 5th all five groups passed a vote by readers and were created.

I expect that comp.sys.hp.hpux will have the largest traffic because most of the existing postings to comp.sys.hp dealt with HP-UX. We can hope that the creation of the comp.sys.hp.mpe newsgroup will encourage MPE users to post questions and answers. This should lead to an MPE group that contains knowledge that is at least equal to that in comp.sys.hp.hpux.

I am also hoping we will see an increase in postings about RTE, Vectra PCs, printers and other issues that did not really fit well in the old comp.sys.hp newsgroup.

After my July 1993 "tip" about comp.sys.hp, I received several e-mail messages from readers asking how to get comp.sys.hp. The first place to look is on your system. If you already get other newsgroups,

you can subscribe to comp.sys.hp.\* through your news reader. (How to subscribe is specific to each news reader.)

If you have e-mail access to the Internet, ask your feed if he is willing to supply a simple newsfeed containing comp.sys.hp.\*. Be warned, however, that reading news is addictive and you will want more than just the HP news groups once you see how useful they are.

The third option, if you do not have e-mail access or a news feed already, is to investigate getting one. There are companies such as UUNET that will charge you for a feed to your site. There are also companies that will give you a login and e-mail address on their system for a fee. Also ask around at a local UNIX users group. There will probably be someone willing to provide you a feed for free.

### High-Speed Modems on 8x7 Systems

My last big systems administration task was to add two Multitech high-speed modems to my 9000/827. Prior to this task the modems were attached to a data switch that would call back the user who had dialed in. A nice, simple security system. However, we were unable to transfer binary files to the 827 through this arrangement because of the setup of the data switch. The obvious solution was to connect the modems directly to the 827. Obvious yes, simple no.

I started by using SAM to define the ttys as modem ports. Then I attached the modems to my 827 using the standard HP 92219Q communications cable. This is the cable that we are using on our 835 and our 1000 A600 for modem connections, so I assumed that it would work. No such luck. The modem would answer and then sit there without getting a login prompt.

*Continued*

## LEADING THE FIELD



That's right, as a leading HP/Apollo reseller, we're ahead of just about everybody in pricing, delivery and inventory.

We have it all, from HP 400 & 700 series through Apollo DN3000 to DN10000. Call us for systems, spares, 3rd party upgrades and peripherals.

For our overseas customers a complete export service is available.

### S.A.R. INCORPORATED

11 Rogers Road, Box 8161 Haverhill, MA 01835  
Telephone (508) 521-6656 Fax (508) 372-0999

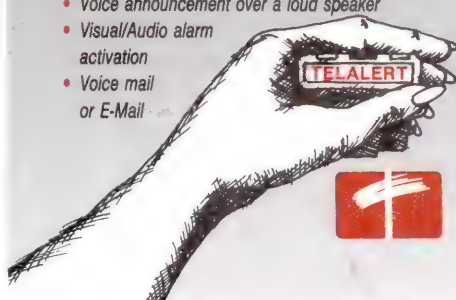
CIRCLE 60 ON READER SERVICE CARD

## TelAlert... keeps you in touch



TelAlert is an alarm and notification solution for Unix™ systems and multivendor networks. TelAlert provides timely notification of events to network and system operations personnel and guarantees a quick response to important events. TelAlert ensures that designated staff take ownership of critical problems and it reports key events and actions to other concerned supervisors and management if desired. Alarm and notification options include:

- Voice notification via local or remote telephone
- Personal pagers including numeric and text
- Direct connect or modem attached printers
- Voice announcement over a loud speaker
- Visual/Audio alarm activation
- Voice mail or E-Mail



TelAlert consists of a hardware device connected at a terminal port and software running on the Unix management system or workstation. TelAlert is designed to be integrated with HP OpenView™, SunNet Manager™, Remedy Action Request System™, Network Paradigm™ and other system and network management environments via their command line interfaces in the device or event configuration menus.

TelAlert provides a complete audit trail file to retain the history of alarm requests and alarm acknowledgments. A comprehensive stored vocabulary allows the user to construct notification messages that pertain to their needs and provide specific details to the user. As a way to ensure that operations staff time is optimized and problems are solved as needed...



### TELAMON has it handled!

492 Ninth Street, Suite 310 • Oakland, CA 94607-4098  
(800) 622-0630 • (916) 622-0630 • (916) 622-0738 FAX

CIRCLE 89 ON READER SERVICE CARD



I called the Response Center and learned that the 92219Q cables were not recommended for the new 8x7 type systems. Instead a 40233A cable was required. I also needed a patch to HP-UX 9.0 to use modems above 2,400 baud. (The patch has probably been superseded by the time you read this, so I will not give the patch number. Call the Response Center and tell them that you are trying to use high-speed modems and they will fax you a "cheat sheet" of the steps to complete to install a modem and the number of the current patch.)

### Dialup Passwords

After I installed the patch and new cables, my modems would answer and connect to the 827. The next task was to add additional security to replace the call back function that the data switch had provided. The method I chose was to add a dialup password.

When a user tries to log in via a modem, he or she is prompted for the user name, password, and, if configured, a dialup password. The dialup password adds an additional level of security only to the dialup lines. You can select which dialup lines require additional passwords and define the password depending upon the shell that the user is using.

The first step in defining dialup passwords is to determine which tty devices will have modems and dialup passwords associated with them. This will depend upon your system. On mine we use `/dev/ttyd0p2` and `/dev/ttyd0p7` for dialup modems and I want passwords on each line for all users.

Next edit the file `/etc/dialups`. If it does not already exist, create it. In this file add an entry, one per line, for each device for which you want to have dialup passwords. My `/etc/dialups` looks like this:

```
/dev/ttyd0p2
/dev/ttyd0p7
```

Next create the file `/etc/d_passwd`. Add the following line to it:

```
/bin/sh::
```

The two colons are important. Between them is where your dialup password will be encoded. If you want different passwords for each shell type, add a line to the file for each shell.

Now, as root, run `passwd` on the file to set the dialup password. For example, to set the dialup password for Bourne Shell users execute the following:

```
passwd -f /etc/d_passwd /bin/sh
```

You will be prompted for the new password and asked to verify it. If you are using different passwords for each shell, execute the command once for each shell, changing the last parameter to be the shell name.

If you are using one password for all shells, edit `/etc/d_passwd` and copy the line for `/bin/sh` and change the `'/bin/sh'` to the name of the login shell.

Now log in across the modem and verify that you are prompted for a dialup password.

### HP ENVIZEX X Terminals

At the Instrument Society of America (ISA) show this year I had the good fortune of using one of the new family of HP X Terminals. The new family is named ENVIZEX and is a replacement for the 700 R/X family. The ENVIZEX terminals also have multimedia capabilities such as audio and scanners and a built-in floppy drive.

The terminals are faster than the equivalent 700 R/X, but I found the floppy drive most impressive. The drive is a 3.5-inch 1.44 MB DOS floppy. When configured on the host system, the user can insert a DOS formatted disk and have it mounted as an HP-UX file system. The terminal handles all the mapping issues. You can read and write from the disk.

HP is promoting the floppy drive as a way to migrate from DOS-based data files to HP-UX without loss of data or large amounts of conversions. From a systems administration point of view it will make transferring files to and from the HP-UX system trivial.

I have an ENVIZEX with floppy drive on order. The way my users transfer files now is to log in to a PC, copy the file to `/tmp`, log on the 827, and copy the file to where they want it. Then they run `dos2ux` or `ux2dos` to convert the file to the correct format and then use the data. With the new ENVIZEX they can mount the floppy and copy any files they wish to and from the floppy.

The ability to transfer files easily is a security hole also. The configuration necessary to mount the floppy must be performed on the host and is on a per user basis, so you can restrict who can mount a floppy when configuring the X Terminal. Since the floppy is mounted via NFS I think that you can mount it as `READ-ONLY` if necessary. When I install mine, I'll let you know.

### Smiley Faces :-)

In the last issue a reader pointed out a mistake in my July 1993 column about real-time gettys. In my response I thanked him and corrected his response. My comment ended with a ":-)" My editor called me to ask what it was and I explained that it was a smiley face, i.e., my correction

was in good humor and I wanted to thank the reader for his correction.

On the Internet and through e-mail it is difficult to express emotions. Most people use smiley faces (or frowns) to express emotions. If something is posted in jest, the posting might end with a ":-)" If the user is not happy with the posting or is expressing a negative feeling about the subject, a frown might be used: ":-{"

Variations on the smiley face are: ":-}" and ":->" Variations on the frown include: ":-<" and ":-o" There is a book published on the various symbols and their meanings if you want more information.

## E-mail

Thanks for all the e-mail. Several people have sent me e-mail with addresses that bounce when I try to reply to their mail or to send mail to the address in their signature. If you sent me e-mail and did not get a response, please try again and I will try to respond.

As always, keep the e-mail coming and send ideas for future columns.

I am adding uugettys to my high-speed modems and will explain what I did and any problems I encountered in my next column. ■

*Chris Curtin, a software developer for Bradley Ward systems, Inc. in Atlanta, Georgia, specializes in device driver development for factory automation on the HP 9000. He can be reached via e-mail at: chris@bwilab3.atl.ga.us*

## Do You Know Where Your Security Holes Are? Find Them with SecurityAudit/UX!

**Have You Heard that UNIX is Notorious for Its Lack of Security Features?  
Do You Know Where to Check to See if Your HP-UX System is Secure?  
Do You Have the Time to Do This Checking Regularly?  
Use SecurityAudit/UX To Do It All!**

EVEN IF YOUR SYSTEM IS SET UP CORRECTLY (AND HOW WOULD YOU KNOW IF IT WAS?) AND HAS NO SECURITY LOOPHOLES, IT CAN BE VERY DIFFICULT TO MONITOR SYSTEM CHANGES, AND TO ENSURE THAT SECURITY ISN'T COMPROMISED. THE MAGNITUDE OF THE PROBLEM INCREASES AS THE TOTAL NUMBER OF USERS CONFIGURED AND THE TOTAL NUMBER OF FILES GROWS. IT'S EASY FOR ORDINARY USERS TO CHANGE THE SECURITY OF THEIR OWN FILES TO ALLOW OTHERS TO ACCESS THE CONTENTS. A LOOPHOLE LEFT BEHIND INADVERTENTLY OR ON PURPOSE MAY BE EXPLOITED BY A DISGRUNTLED EMPLOYEE OR A HACKER TO BREAK SYSTEM SECURITY, SOMETIMES MUCH LATER.

**SecurityAudit/UX** PRODUCES OVER 40 REPORTS, CONTAINING DETAILED INFORMATION ON THE FOLLOWING CLASSES OF PROBLEMS:

- User and Group-related problems, including weak passwords and non-unique identification numbers.
- File-system related problems, including historical tracking of files and detection of potential Trojan horses.
- PDF-related security problems, extended to detect changes in ACL specifications.
- Logging subsystems status display, and logfile analysis.
- Network-related status display and configuration weaknesses.

**SecurityAudit/UX** RUNS ON ALL HP-UX BASED 9000 SERIES 700 AND 800 SYSTEMS, AND HAS BEEN SPECIFICALLY TAILORED TO ADDRESS PECULIARITIES OF HP-UX, SUCH AS PDF, ACL AND HP'S SHADOW PASSWORDS.

**Call EUGENE VOLOKH for more info!**



1135 S. Beverly Drive  
Los Angeles, CA 90035 U.S.A.  
FAX (310) 785-9566

CIRCLE 40 ON READER SERVICE CARD

### Hewlett-Packard 9000

#### It's Our Specialty

<b>200/300 Series</b> 216/236/217 310/320/330 350/360/370 318/319/340 345/375/380	<b>400 Series</b> 425e 425t 425s	<b>700 Series</b> 705/710 715/720 730/750
--	---	--

*We also carry memory and interface for all of our workstations*

<b>Printers</b> 2225A/B/C/D 3630A PaintJet C1602A PaintJet XL LaserJet II/IIID/IIIP LaserJet III/IIID LaserJet IIIP, IIISI	<b>Mass Storage</b> 9121/9122 9153A/B/C 7957A/B 7958A/B/S 7959B/S 7963B C2213A/D DAT Drives CD ROMs Optical Drives	<b>Plotters</b> 7440A ColorPro 7475A 6-Pen 7550A/B Self-Feed 7570A DraftPro 7575A DXL, 7576A EXL 7595A/B/C DraftMaster I SX 7596A/B/C DraftMaster II RX Electrostatic DesignJet
--	--	---

<b>Specials</b> 7585A/B Plotters HP Vectras 380C+ Workstations
---

**We offer large discounts,  
outstanding service  
and immediate delivery.**  
**TED Dasher & Associates**  
 4117 Second Ave. S.  
 Birmingham, AL 35222  
 PH: 800-638-4833  
 FAX: 205-591-1108

CIRCLE 49 ON READER SERVICE CARD



by Larry Headlund

## Motif ComboBox

ONE GUI UNIT FAMILIAR to users of Microsoft Windows is the ComboBox. This is sort of an inverted SelectionBox with a text field at the top, a down arrow to the right of the text, and a list of selections that pops up under the text when the down arrow is pressed. Making a selection from the list copies it into the text box. Usually the list then disappears. The standard behavior may be augmented by requiring the text you type in directly to match one of the items on the list or by having direct entry to the text box be forbidden, allowing entry only through the list.

The ComboBox is a common way to offer restricted choices. You would use a ComboBox instead of an option menu when the number of potential choices is "too large," usually when more than the interface designers' magic number of seven. Because of the detail work involved with each push button on an option menu, a ComboBox would also be appropriate when the selections change dynamically or are determined at run time.

A SelectionBox offers the advantages of a ComboBox but uses up more precious screen real estate. SelectionBox dialogues are more distracting and in some ways less convenient. And of course the bemused slaves of the Dark Power, Microsoft Windows users, are used to ComboBoxes.

Motif does not have a ComboBox widget. I am not the first person to notice this. There are several existing substitutes, both commercial and non-commercial:

The Xm++ package, a C++ wrapper to the Motif toolkit, includes a ComboBox object. Xm++ was written by Bernhard Strassl of the Vienna User Interface Group, University of Vienna. It is available in the contrib directory as

Xm++.0.5X.tar.Z.

Integrated Computer Solutions (ICS) offers a Combination Box widget as part of a commercial package. ICS can be reached at 201 Broadway, Cambridge, MA 02139.

Field Widgets from Marlan Software, 10675 Ivy Ridge, Houston, TX 77043, includes ComboBox behavior.

The above is by no means an exhaustive list. It does not even include any of the cross-platform tools, which would generally have a ComboBox substitute.

I should also mention that a ComboBox widget is rumored to be part of Motif 2.0. While this information is of higher reliability than Elvis sightings, in any case I needed a ComboBox now.

Instead of using any of the existing substitutes, we are going to write our own.

### *A ComboBox Widget?*

A manly man would write a complete ComboBox widget. It is arguably the right thing to do. A new widget would offer transparent access and fit neatly in with the other widgets. However, we are not going to do this.

First off, it would be a lot of work, most of it in testing. Second, we would have to track changes in Motif in the code. We would have to check for compliance and compatibility with existing widgets. Third, we think all this work is already being done by OSF for the next release. Finally, doing it without writing a widget allows us to exercise the power of WCL templates.

People who know my tastes would not be surprised that I chose a feature of the Widget Creation Library (David E. Symth author, contrib/wcl2.5.tar.Z) to implement a ComboBox. If you are not a fan of this tool, rest assured that most of the work is in design and is easily transferred to another coding style.

### What Is a ComboBox?

We see by examination that a ComboBox must consist of a container widget of some type, a text widget, a down arrow widget and a list widget. To me, the Form widget offers the right combination of flexibility and control. Naively, we would see a structure as follows:

Parent	Children
XmForm	XmText (text) XmArrow (arrow) XmList (list)

We see one problem with this almost immediately. What if we have more items than can be conveniently displayed all at once? That is, we want to use a ScrolledList. Now, there is no separate scrolled list widget in Motif. Instead the function `XmCreateScrolledList()` creates an intermediate Scrolled Window parent to `XmList`. The function names this Scrolled Window `<XmList name>SW` or in our case, `listSW`. So the structure looks like:

Parent	Children
Children	
XmForm	XmText (text) XmArrow (arrow) XmScrolledWindow (listSW)    XmList (list)

All of our layout constraints will apply to the ScrolledWindow parent `listSW`, not to the `XmList` list itself.

### How Do We Want the ComboBox to Look?

Following the standard, we want the text on the left, and the down arrow immediately to its right as permanent features. The list will appear under the text. The attachments become:

```
text.leftAttachment: ATTACH_POSITION
arrow.leftAttachment: ATTACH_WIDGET
arrow.leftWidget: ^text.
```

#### LISTING 1 List to Text Widget Function

```
#include <Xm/Xm.h>
#include <Wc/WcCreate.h>
#include <Xm/List.h>
#include <Xm/Text.h>
#ifdef _NO_PROTO
static void listToTextCB(widgetList, strWidgetName, cbs)
Widget      widgetList;
char*       strWidgetName;
XmListCallbackStruct* cbs;
#else
static void listToTextCB(
Widget      widgetList,
char*       strWidgetName,
XmListCallbackStruct* cbs)
#endif
{
    Widget widgetText = WcFullNameToWidget(widgetList,
                                             strWidgetName);

    if (widgetText) {
        int intMaxLength =
XmTextGetMaxLength(widgetText);
        char* strValue;

        XmStringGetLtoR(cbs->item,
                        XmSTRING_DEFAULT_CHARSET,
                        &strValue);

        strValue[intMaxLength] = '\0';

        XtVaSetValues(widgetText,
                      XmNvalue, strValue,
                      NULL);

        XtFree(strValue);
    }
}
```

```
listSW.topAttachment: ATTACH_WIDGET
listSW.topWidget: ^text
```

The `^name` construct indicates a sibling widget called `name`. The `^` alone indicates the parent of the widget, `^^` the parent of the parent, etc.

Normally we would create the `listSW` unmanaged, managing it when the arrow button is pressed. However, the interaction between the ScrolledWindow and container widgets is not simple. The problem is that the parent widget cannot be sure of the size of an unmanaged ScrolledWindow. The usual result is that when the ScrolledWindow is managed later in the day, it is invisible! Hardly a desirable state of affairs. If we create the ScrolledWindow managed and unmanage it after all the children of the parent Form widget are managed, all is well.

*Continued*



**LISTING 2** *ComboBox Template File*

```

!
!   ComboBox Template
!
!   ComboBox is a XmForm widget with children:
!       *text
!       *XmArrowButton
!       *XmScrolledWindow -> XmList
!
!   Pressing the down arrow manages the list
!   Selections from list are copied into text

!public
!   The following should be set by the calling resource file:
!       *text.columns:
!       *text.maxLength:
!       *list.columns:
!       *list.maxLength:
!       *list.visibleItemCount:
!       *list.itemCount:
!       *list.items:
!
!       list.maxLength >= text.maxLength

!private

.wcClass:          XmForm
.wcChildren:       \
                  text, \
                  arrow, \
                  list

.wcAfterManageChildren:  WcUnmanage(this*listSW)

.text.leftAttachment: ATTACH_POSITION

.arrow.leftAttachment: ATTACH_WIDGET
.arrow.leftWidget:    ^text
!   text widget
.text.wcClass:        XmText
!   arrow widget
.arrow.wcClass:        XmArrowButton
.arrow.arrowDirection: ARROW_DOWN
.arrow.activateCallback: WcManage(^listSW)
!   list
.*list.wcConstructor:  XmCreateScrolledList
.*list.selectionPolicy: SINGLE_SELECT
.*list.singleSelectionCallback: listToTextCB(^text), \
                               WcUnmanage(^)

.listSW.topAttachment: ATTACH_WIDGET
.listSW.topWidget:     ^text

```

# Computronics

## PEEK™ for Unix

*Help users without running to their terminals: see their error messages, their screens, their input! Type on their terminal from yours!*

- Problem Solving:** When PEEK is started, all data in the current buffers is displayed; this gives you some past history, to allow you to diagnose user problems even after they have occurred, often after they have disappeared from the monitored user's screen.
- Poke Mode:** Input into any terminal from another terminal! Gracefully log out unattended terminals. With Poke mode, you become another terminal. You can type anything on behalf of another user, including an <interrupt>!
- Training:** Each student's terminal PEEKs on the screen of the instructor and sees exactly what the instructor sees!
- Productivity:** Use PEEK to work with multiple terminals at once and run programs on each of them. Switch back and forth between these sessions! Authorized users can PEEK and Poke on any terminal that is already logged in.
- Console Access:** Type system console commands from any authorized user.
- Script Access:** Set up shell scripts to poke commands on user terminals or to execute console commands!
- Ease of Use:** A message command is included to easily send text to the monitored user while they are typing. [Our *Status Line Message* software allows messages to be sent to the status line of the terminal without disrupting the screen (extra cost option).]
- Supports:** Local terminals, dial in users, TCP/IP users, character based X-Windows users, any logged in user! (The only exception is graphical X-Windows users.)
- Control Use:** Restrict PEEK access by user id or group based on the monitored user's id/group.
- Auditors:** Invoke PEEK as a background process into a output file to get a log of a user's activities!
- Support:** A one year warranty is included, providing new releases and telephone support.

Pricing for PEEK for UNIX is based on the number of PEEKable users on a single system. It is based on the number of users you wish to be able to PEEK upon (the total number of users that are configured as PEEKable). Pricing for PEEK for UNIX ranges from \$200 to \$2000 per system.

We will be happy to answer any questions you might have as well as to send you more detailed information on PEEK, the system administrator's and programmer's best friend. PEEK for UNIX is available for the IBM AIX Operating System, HP-UX, SUN (SunOS4 and Solaris2), Data General DG/UX, DEC Ultrix, MIPS RISC/os, and selected other UNIX systems; call for your system.

**Computronics** • 4N165 Wood Dale Road • Addison, IL 60101 USA  
Phone: (708) 941-7767 • Fax: (708) 941-7714 • Internet: [info@computron.com](mailto:info@computron.com)

AIX is a registered trademark of IBM Corporation. The X-Window System is a trademark of the Massachusetts Institute of Technology. UNIX is a registered trademark of American Telephone & Telegraph.

CIRCLE 99 ON READER SERVICE CARD



**LISTING 3** *Resource File*

```
! Demo resource file for ComboBox application

Mri.wcChildren:      cb
Mri.wclTemplateFiles: ComboBox

Mri.cb.wcTemplate:    ComboBox
Mri.cb*text.columns:  6
Mri.cb*text.maxLength: 6
Mri.cb*list.columns:  6
Mri.cb*list.maxLength: 6
Mri.cb*list.visibleItemCount: 5
Mri.cb*list.itemCount: 9
Mri.cb*list.items:    \
                      1xxxxx,2xxxxx,null,3xxxxx,4xxxxx,5xxxxx,6xxxxx,7xxxxx,8xxxxx,9xxxxx
```

An alternative that is one of the behaviors that are sometimes desirable is to leave the ScrolledWindow always managed. Personally, if this is the case I don't see why we wouldn't use a SelectionBox and be done with it.

**ComboBox Behavior**

We will consider only the special behavior that makes a ComboBox a ComboBox. Help callbacks, for example, won't be mentioned and will just be added with our usual manner and style. There are four things you can do in a ComboBox:

1. enter text in the text widget
2. press the arrow button
3. select an item from the list
4. move the scrollbar on the ScrolledWindow

Items 1 and 4 are handled by the text widget and the ScrolledWindow widget without our help. Item 2, pressing the arrow button, manages the ScrolledWindow listSW. This takes no new code using WCL and minimal code with any other technique. That leaves us with one callback to code, a function that will copy the selection from the List widget to the text widget. I have chosen to code this as a general-purpose list-to-text widget function rather than one specific to the ComboBox (Listing 1).

**A Word About Templates**

Templates are a relatively recent addition to WCL. In WCL you specify the widget type of a widget in the resource file thus:

```
*formA.wcClass: XmForm
```

or

```
*widgetB.wcClass: XmRowColumn
```

Templates extends this idea by allowing you to define templates and associate them with widgets. Suppose your application has the name Mri. You wish to use the template file ComboBox and associate it with the child widget cb. You would need two additional lines in your resources file for Mri:

```
Mri.wclTemplateFiles: templates/ComboBox
Mri.cb.ComboBox.wcTemplate: ComboBox
```

Note that we have a relative path name (templates/\*) to the template file. This is personal taste. I like to put all my general-purpose templates in a subdirectory off of app-defaults. This avoids confusion with application resource files themselves.

What does a template file look like? Listing 2 shows the complete template file for ComboBox. Note that there is no leading application name or \*, just a period.

**Putting It All Together**

With WCL, the resource files do all the work. Assuming we have linked in the code from Listing 1 and created our ComboBox template file as in Listing 2, a complete, if limited, testing program just needs a resource file like the one in Listing 3.

With what I think is an absolutely minimum of coding, we have created a functional ComboBox. ■

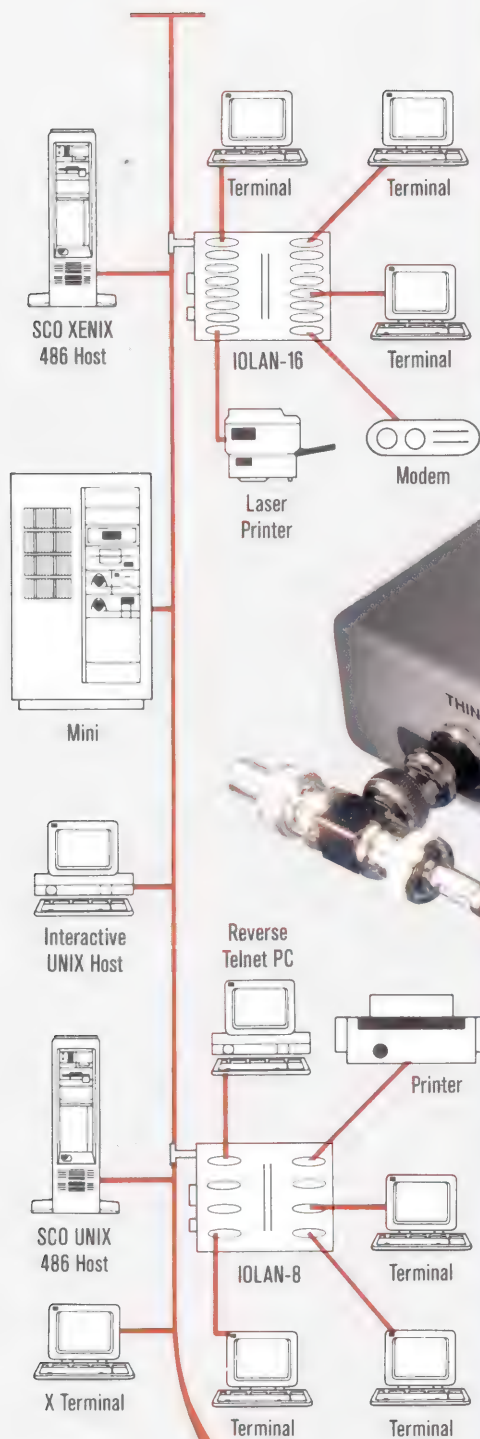
**REFERENCES:**

"Wcl 2.0: The Widget Creation Library," David E. Smyth, *The X Journal*, Issue 2, Spring 1992

---

*Larry Headlund is president of Eikonal Systems and has been working with commercial UNIX since 1982 and with X since 1988. He can be reached at (617) 482-3345 or lmh@world.std.com.*

# Finally a terminal server that won't retire before you.

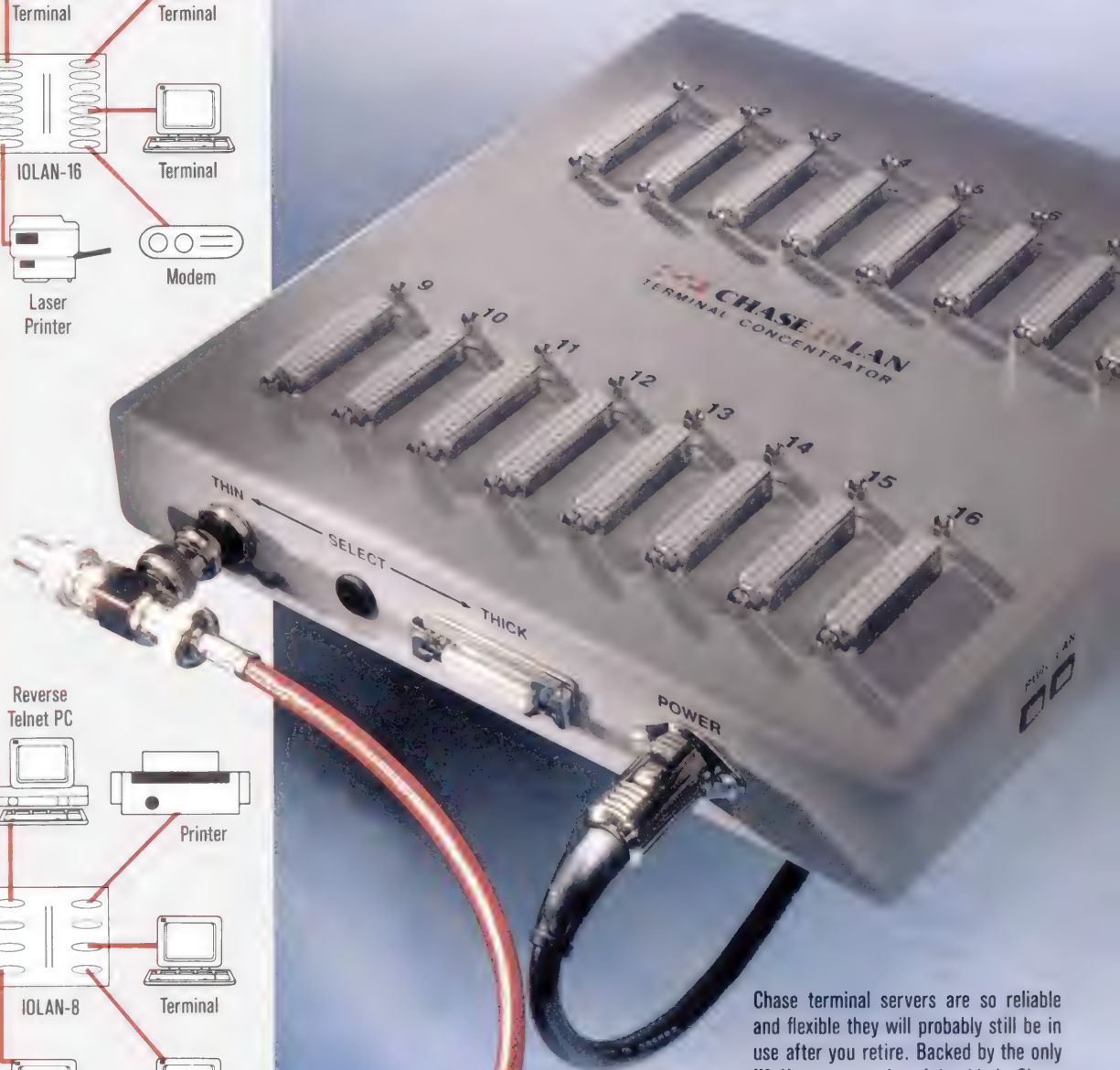


Typical IOLAN Network  
Ethernet - TCP/IP based LAN.

**CHASE  
RESEARCH**

*Connect with the future*

CIRCLE 28 ON READER CARD



Chase terminal servers are so reliable and flexible they will probably still be in use after you retire. Backed by the only **lifetime warranty** of its kind, Chase IOLAN is built to last *and* built to perform.

With IOLAN you can reliably add terminals, printers and modems to your TCP/IP networks. IOLAN simplifies cabling and adds flexibility to your open systems applications. By making IOLAN easy to use and accessible to PC users, Chase is now the *leading supplier of terminal servers* for the SCO and Interactive Unix marketplaces.

Only Chase offers you a unique menu interface, advanced networking statistics and Simple Network Management Protocol (SNMP) - all at a price you can afford.

As more and more users make their way to networking they also make their way to Chase. Discover Chase today by calling for a **FREE COPY** of our 'Terminal Server Application Guide'.

Chase Research Inc.  
545 Marriott Drive, Suite 100  
Nashville TN 37210  
615 872 0770  
615 872 0771 (fax)

Chase Research PLC  
Chineham Business Park  
Basingstoke, Hants. RG24 0WD U.K.  
(44) 256 52260  
(44) 256 810159 (fax)

Chase Research GmbH  
Zettachring 6  
D-7000 Stuttgart 80, Germany  
(49) 711 728 7155  
(49) 711 728 7156 (fax)

Chase Research and Chase IOLAN are trademarks of Chase Research PLC. All other trademarks are acknowledged





by Bill Hassell

## New Version of LaserROM/PC

*I LIKE THE HP-UX version of LaserROM. Is there going to be a similar version for PCs?*

Starting with the November 1993 subscription disc (MPE or HP-UX) there is a new version of LaserROM/PC that can be installed to view the discs. It has a look and feel similar to LaserROM for HP-UX and is a major enhancement to the current PC version. Some of the features are:

- Automatic LaserROM disc discovery for one or more CD-ROM drives or networked discs
- Searches may cross multiple discs and may include an unlimited number of bookshelves
- Action icons across the top to make navigation faster
- Control of the fonts for labels and bookshelf/book titles
- Custom bookshelf management

You can update to the latest version by following the instructions in the README file located in the CD-ROM directory PCINSTALL.

### Photo CD News

Four companies have signed letters of intent with Kodak to work with Photo CD and the prepress market, the final step before printing. The four companies (Crosfield, Dainippon, Linotype-Hell, and Scitex) will add Photo CD support to their high-end scanner packages. This move is seen as the next logical step toward high-end Photo CD support.

Although Kodak's scanners are fairly high resolution, the printing industry demands even higher quality and until now, the Kodak images have not been quite what the printing industry needs. With this alliance, Photo CD workstations

can obtain the images from top-of-the-line drum scanners and output the results in the Kodak YCC format as well as the printing industry standard CMYK format.

Kodak has also announced that Adobe Systems will incorporate Kodak's Color Management System into Adobe Photoshop 2.5.1, which will allow precise matching of screen colors to the original and to the final printed copy.

Finally, Kodak has started selling both a Photo CD changer as well as a portable Photo CD player. What makes the portable unit so exciting is that both sound and video for TV are available, making presentations as simple as locating a TV and plugging in the handheld unit. No more slide projectors or overheads (with the annoying white screen between slides).

As new industries begin publishing catalogues on Photo CD and medical books place pictures, electronic scans and measurements, and research data needing massive amounts of video data onto Photo CD, the time will come when years of classical research can be done in a few weeks by searching through CDs. The days of paper books and microfilm/microfiche are numbered.

### Low-Cost Fonts on CD

Fonts used to be priced at \$30 to \$90 each, putting large font selections out of the hands of the average desktop publisher. Now, Wayzata has produced a collection of shareware (low-cost fees) and freeware fonts called Font Fun House. All of these fonts are in Postscript type 1 format as well as TrueType. Because they are on CD, you won't need a lot of hard disk space for these decorative characters. They sell for about \$50 at Tiger Software (800) 888-4437.

### Sony's New Portable Multimedia Player

At \$995, the Multimedia CD-ROM Player is a bit pricey, but it is also the first on the market to offer as many features in one small package. While it plays audio CDs, the two-pound unit has a 3x4-inch LCD screen with CGA resolution and a complete keyboard with a numeric keypad. It offers standard NTSC composite video for an external television that will produce 256-color images, and it can also connect to an external computer through the built-in RS-232 port.

Sony stresses that this is not a PC peripheral but a new way to view CD-ROM titles such as *Power Negotiating*, *The Civil War*, or even the *King James Bible*. There have been commitments from several companies to ship more than 60 titles by the end of 1993. ■

*Bill Hassell is an HP-UX system support engineer at the HP Atlanta Response Center. He can be contacted at his e-mail address, which is blh@hpuaerca.atl.hp.com.*

# LAN-HO!

## Total HP Connectivity One Product, One Price

**B**efore you embark on a journey into the maze of LAN connections, look to MiniSoft's terminal emulation software for complete PC-to-host connectivity.

Covering all industry-standard local area networks, MiniSoft 92 combines all the connectivity software into a single package. It provides you with the simplest, most direct route available, creating a friendly landscape of LAN connections.

So why pay extra for LAN connectivity when you can get the same LAN support in ONE package with HP and DEC terminal emulation. MiniSoft 92 provides connections for Telnet, Network Services, TCP/IP, Novell, Lan Manager, Banyan, Lantastic, Windows for Workgroups and many more. It also provides all the terminal emulation features upon which thousands of MiniSoft customers have come to rely.

Whether you are making serial or LAN connections in Windows, DOS or Macintosh environments, MiniSoft 92 will get you where you need to be at \$159.

Call 1-800/682-0200 now to order your copy!

## MINISOFT

MiniSoft Inc.  
312 Maple Street  
Snohomish WA 98290  
800/682-0200

Banhofstrasse 46  
CH-6048  
Horw, Switzerland  
+41/41.47.2320  
FAX +41/41.47.3866



MiniSoft 92 is a registered trademark of MiniSoft Inc. All other trademarks are the property of their respective owners.

**CIRCLE 98 ON READER SERVICE CARD**





# CSL/HP-UX

THIS MONTH I WOULD LIKE TO REVIEW several topics of interest to Interex members. So much has happened in the last several months (I'm writing this in October) that I thought I would collect all these thoughts and try to bring everyone up to date.

## *Interex is now connected to the Internet*

I'm excited to be able to say this: "We're finally connected!" Several of the HP-UX members have been pursuing this little project for over two years and through the hard work of board member Alan Tibbetts, our dream is now reality. Through a 56kb connection, Interex enjoys many of the benefits that some of us have had for years. Electronic mail, anonymous ftp, interactive access to the CSL On-Line Indices, and other information resources are just some of the capabilities we can look forward to. We are establishing some electronic forums for discussing CSL issues, and will soon be offering new methods of access to the CSL. The electronic CSL forums are implemented using a list server package similar to what is available on mainframes over BITNET. The server has many capabilities including mail-lists and file downloading.

The mail list will accept text messages, and then "broadcast" them to a list of subscribers. Thus you can utilize the list to send announcements, helpful information, or anything that might appeal to a wide audience. You can also carry on conversations or threads with other list members by reading the messages and replying to them through the list. Let's say you want to join the `cslhpux_list`. You would send a mail message to `listproc@interex.org` with the single text line "sub `cslhpux_list` Paul Gerwitz". Your mail message might look like this:

```
Subject: subscription
To: listproc@interex.org
sub cslhpux_list Paul Gerwitz
```

This will subscribe you to the list. When you want to send a message to the members of the list, you send the message to the "`cslhpux_list@interex.org`" and it will be automatically sent to all the subscribers.

The other functions available on the list server are summarized here, courtesy of the HELP file. You would send a message to "`listproc@interex.org`" with various commands in the body of the message.

help [topic]	get help
subscribe <list> <your name>	Subscribe
recipients <list>	Find out who else is subscribed
information <list>	Find out about a list
lists	display all the lists available
index	Get a list of files in the selected archive
get	Get a file from the specified archive

We invite you to join in on the conversations.

### 1994 North American Conference

The CSL committees (MPE and RTE included) all participated in running a booth on the show floor again this year. After our success in 1992 at New Orleans (despite the hurricane), we really wanted to make a splash this year. Through the hard work of Marvin Barnes and Dale Halterman, the booth was extremely well received, with lots of members and potential members stopping by to find out more about the CSL. I must have spoken to hundreds of people over the course of the week, getting suggestions, helping find solutions to specific problems, and encouraging non-members to check out the CSL through obtaining a site membership. We even managed to sell a few swap tapes right at the show, a significant feat! The swap tape included 21 contributions including a movie file viewer, HP-UX versions of the popular PC programs XMODEM/YMODEM/ZMODEM, and up-to-date versions of the X11 building tool IMAKE. As a special incentive to our fellow MPE/iX members, the entire HP-UX swap tape was included on the MPE swap and the POSIX contributions from MPE were included on the HP-UX tape.

### SIGUNIX is alive and well

Another significant happening at the conference was the meeting of SIGUNIX, the special interest group for HP-UX members. The room was standing room only, and we talked a lot about getting ourselves rolling. The new chairman is Denny Allain, who is already doing a bang-up job in getting the SIG going again. A mailing list has been created for the members to communicate through and we can expect lots of dialogue to begin occurring. I reported on the progress of the CSL and asked

OUR 14th YEAR

## QUALITY HP EQUIPMENT WITHOUT THE HP PRICE

**DON'T UPGRADE YOUR HP SYSTEM UNTIL  
YOU GET A SECOND OPINION FROM THE  
SECOND SOURCE FOR HEWLETT-PACKARD  
1000-3000-9000 EQUIPMENT**

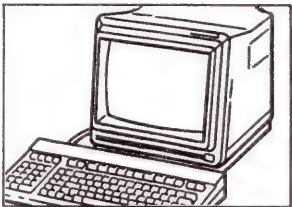
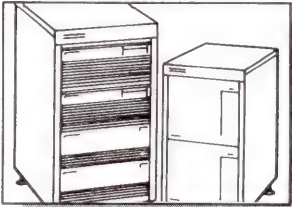
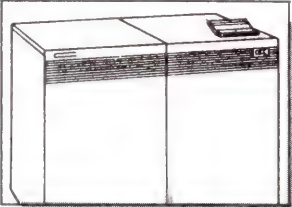
**Consult with us about cost-saving alternatives**


- Complete Configurations
- Individual CPUs-Peripherals
- Memory Upgrades and Feature Enhancements
- Classic and Spectrum Equipment

**WE BUY**  
Highest Prices Paid

**WE SELL**  
\*All Items Sold Are Guaranteed for HP Maintenance  
\*Short and Long Term Leases Available

**WE TRADE**  
Over 1000 satisfied Hewlett-Packard users are our  
customer references throughout the  
United States, Canada, Europe, and the Far East.



**C.S.U. Industries, Inc.**  
207 Rockaway Turnpike, Lawrence, NY 11559  
Ask for Mordi: (516) 239-4310 FAX (516) 239-8374

OUR 14th YEAR

**CIRCLE 18 ON READER CARD**

everyone to consider contributing and maybe working on the QA team or serving on the committee.

Lastly, I would like to make a pitch to the members of Interex for some help and guidance. The membership of the CSL HP-UX committee currently stands at two. I would like to add a few people to the committee at this time as there are some significant efforts under way in 1994 which I will not be able to handle alone. I am looking for people who have used the CSL, are technically oriented users in either a commercial or technical environment, and are willing and able to commit to about two hours a week and two weekend meetings a year. If you would like to submit your name,

please send a brief message telling me of your interest and a little bit about yourself. I will be contacting each of you and hopefully announcing the appointments in the spring. ■

*Paul Gerwitz is chairman of the CSL/HP-UX committee. He is a system analyst at Eastman Kodak Company in Rochester New York. He can be reached at 716-477-3067 or by e-mail at [gerwitz@interex.org](mailto:gerwitz@interex.org) or [gerwitz@kodak.com](mailto:gerwitz@kodak.com)*



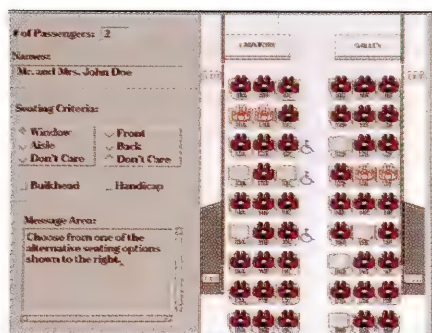


# New Products

## GUI Development

Century Computing has announced TAE Plus Version 5.3 for GUI development and runtime control. The product does not require the designer to program in X or Motif.

With TAE Plus, designers construct an interface out of building blocks called "presentation types." These elements correspond to Motif widgets, such as check boxes, radio buttons, scroll bars, icons, etc. Developers can select, resize, and position the presentation types on their display, called a Workbench, and the corresponding code and values are automatically generated in C, C++, or Ada. In addition



**Airline reservation system designed with Century Computing's TAE Plus**

to the presentation types, TAE Plus provides graphic representations of real-time data through Dynamic Data Objects (DDOs). These dials, gauges, pictures, maps, switches, icons, and animated elements can be manipulated

to enter data or control the application.

TAE Plus's Code Merge facility is designed to easily integrate user interface code with application code when an element is added to the user's display. Changes to fonts, colors, placement, size, alignment, text labels, text for menu bar options, and online help text can be made without changing the application code or recompiling or linking the program. An automated scripting facility also is included to make usability testing easy.

Pricing for TAE Plus Version 5.3 is based on the number of TAE developers in a work group, with licenses for 1 to 15 developers ranging from \$2,250 to

\$11,200. Prices are discounted for work groups of more than 15 developers.

Contact Century Computing Incorporated, 1014 West St., Laurel, Maryland 20707, phone: (301) 953-3330 or (800) 823-3228.

## Source Code Debugging

ParaSoft Corporation has announced Insight 1.1, a C source code debugging tool. Insight is designed to detect all memory reference errors when that reference is executed, using comprehensive "knowledge" of every data structure and every variable accessed in the source program. It checks all types of memory references—including those to static, stack, shared, and dynamically allocated memory—and provides a complete diagnosis, including the name of related variables, the line of source code containing the error, a description of the error, and a stack trace.

The product can find all library interface errors, such as mismatched argument types or function declarations, out of range or otherwise invalid arguments in library calls, and errors returned by library calls.

Insight is compatible with third-party debuggers and compilers and creates no additional files in other directories, according to ParaSoft. The product is used by processing the program to be tested with the Insight program in place of the normal compiler. This creates a version of code that includes calls to the Insight library. Error reports can be generated by simply relinking the program in question, with no recompilation required.

The product is comprised of four distinct modules, each of them separate programs: the Insight module, which is the basic runtime debugger;



## Don't Leave it to Chance.

NetBase Client from Quest Software is a simple, straight forward solution to today's Client/Server demands. Your existing data becomes accessible without remote logons, expensive user fees or unnecessary implementation chances.



As high performance networking software, NetBase Client gives UNIX, DOS, and Windows Client/Server applications complete read and write access to data residing in MPE and TurboIMAGE file systems.

MIS staffs can quickly implement applications that are tightly integrated with existing HP 3000 systems.

With NetBase Client, users win every time. Call Quest Software 714-720-1434.

**QUEST  
SOFTWARE**

CIRCLE 91 ON READER SERVICE CARD





Invision, a GUI for presentation of data; Inuse, a GUI for presentation of memory; and Total Coverage Analysis (TCA), to make sure all functions have been checked.

Insight is available for HP 9000s and other UNIX platforms, providing full support for Release 5 of the X Window System and Motif Version 1.2. A single copy costs \$995. Under the license agreement, this copy must reside in one place at the site, but an unlimited number of users may use it for no additional charge.

Contact ParaSoft Corporation, 2500 East Foothill Blvd., Pasadena, California 91107-3464, phone: (818) 792-9941, fax: (818) 792-0819, e-mail: insight@parasoft.com.

### Reverse Engineering and Testing

McCabe & Associates has announced significant enhancements to its reverse engineering and testing software tools. The new release, Version 4.0, incorporates a new data tool, major enhancements to CodeBreaker, and a link to popular desktop publishing packages.

The data tool, which will be incorporated into the core Battlemat tool, is designed to view a software system from the data perspective. It supports two new McCabe data metrics: Global and User-Specified Data Complexity. Global Data Complexity measures the cyclomatic complexity of a module's structure as it relates to global/parameter data. User-Specified Data Complexity provides the same measures for a portion of the data.

CodeBreaker, initially designed as a tool to find redundant and reusable code, has been paired with BattlePlan, the company's forward engineering tool, to assist developers from concept to code.

### Desktop Storage

Tripac Systems Corporation, a joint venture among leading regional computer peripheral distributors, has introduced DataStor 3.5", an integrated mass data storage subsystem that stores up to 8 GB in a 6-inch by 12-inch space and has the lowest noise level in the industry, according to the company.

DataStor 3.5" features hard disk and DAT drives from HP and is upgradeable to meet increasing data transfer rates and data access times.

DataStor's hard drives provide up to 200,000 hours mean-time-between-failure and up to 2.1 GB capacity per drive. DAT drives provide 50,000 hours MTBF for system reliability and up to 8 GB capacity with compression.

The storage subsystems are compatible with the HP 9000 and other platforms.

Contact Tripac Systems Corporation, 5215 North O'Connor, Suite 200, Irving, Texas 75039, phone: (214) 432-3550, fax: (214) 869-4550.



Version 4.0 is compatible with HP 9000 Series 300, 400, and 700 computers. A six-user license is priced at \$21,500.

Contact Jane L. Trevaskis, McCabe & Associates, phone: (410) 995-1075 or (800) 638-6316, fax: (410) 995-1528.

### Low-Cost Memory

Martech, reported to be one of the oldest suppliers of HP-compatible memory, is now shipping memory for new HP corporate business computers in upgrade sets up to 64 MB and at less than half the cost of HP, the company notes. HP systems supported are the HP 9000 Series 800 and Series F, G, H, and I running HP-UX. Sets also are available for HP 3000 Models 977 and 987. Martech also maintains a large inventory of memory products for older systems, including HP 9000 Series 8x7 and HP 3000 Series 9x7.

Martech uses the same high-quality components as HP and employs modern robotics and automatic testing equipment in the manufacture of all its memory products, the company notes.

Contact Martech, 1151 West Valley

Bld., Alhambra, California 91803, phone: (818) 281-3555, fax: (818) 284-3092.

### Version Control

OCS has announced LIBRARIAN/iX 2.0, a version control and change management system designed to protect application integrity, automate repetitive tasks, and ensure consistent rollback to previous versions. LIBRARIAN/iX 2.0 supports MPE/iX and HP-UX machines.

LIBRARIAN features pull-down menus, context-sensitive help, customized menus, new macros for creating custom menus, and an improved ShortCut facility. New functions include branch, merge, and delta management.

LIBRARIAN/iX 2.0 is priced based on configuration. Contact Operations Control Systems, 560 San Antonio Road, Suite 106, Palo Alto, California 94306, phone: (415) 493-4122, fax: (415) 493-3393.

### Internal Battery/Disk Backup

Imperial Technology has introduced a new internal disk and battery backup

## Consider the Advantages of Interex's Direct Mailing Services in Your Future Advertising Campaigns

- 40,000 HEWLETT-PACKARD Computer Users
- Response rates up to 10 percent or higher
- A one-week turnaround time
- Less than 2 percent returns because of bad addresses
- Full refund for all nixes (bad addresses)
- 15 percent discount on all orders over 10,000 labels
- List updated daily
- 74 percent of our users are company Decision Makers

**We can offer you the greatest value for your money with our:**

1. Direct Mailings
2. Card Decks (four times a year)

Do you have NEW PRODUCTS you want to announce to the HP community?

The HIGHEST RESPONSE RATES for your new developments are almost always with Direct Mailings, or Card Decks.

We can mail your advertisement items from our designated mail house in California, or from a bonded mail house in your city.

Give us a call today; we'll get your important product message out to our 42,000 HP Computer Users, and YOUR REPLIES will start coming to you the following week.

**INTEREX**

For more information, contact Liway Gimenez, INTEREX, P.O. Box 3439, Sunnyvale, California 94088-3439 USA, Phone 408.747.0227, FAX 408.747-0947.

# MULTIPLE emulations

## FOR MIXED ENVIRONMENTS

### WITH SIMILAR 'LOOK & FEEL'

PERICOM's **teem** range of connectivity software tools will help protect your company's investment in existing application software. **teemtalk** for the Microsoft® Windows™ operating system and **teem-X** for the X Window System allow access to an entire mainframe

world, enabling the widest range of PCs using Microsoft® Windows™ and X Window-based display stations including DEC, IBM, HP, Silicon Graphics and Sun to emulate the widest range of terminals.

**teem** products feature flawless emulation of industry standard text and graphics terminals including:

DEC VT100, 220, 320 & 340 (ReGIS)	Prime PT250
IBM 3270	Retrographics VT640
Tektronix 4010, 4014, 4207 & 4111	Tandem 6526, 6530
HP 2392A, 2622A, 700/92	Westward 2119, 3220
	Viewdata

And PERICOM connectivity doesn't stop there. **teem** products also provide advanced connectivity and productivity features including:

File transfer	Dynamic window sizing
Scripting language	Dynamic Data Exchange
Auto colour mode	Cut and Paste
Programmable soft buttons	Extensive network support

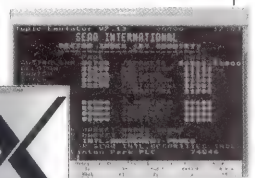
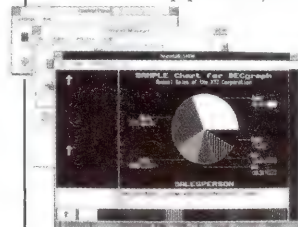
So for cost-effective terminal emulation that makes the most of your IT investment, call PERICOM now! (DOS products also available)



Pericom Inc  
9 Princess Road, Suite D  
Lawrenceville, NJ 08648, USA  
Tel: 609 895-0404 Fax: 609 895-0408  
UK Tel: + 44 (0)908 265533  
France Tel: 1 30.61.50.25  
Germany Tel: 02 14/50 61 66  
Singapore Tel: 278 6545/6  
E-Mail: barryb@pericom-usa.com

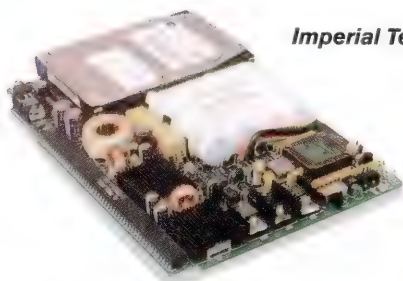


Microsoft is a registered trademark and Windows are trademarks of Microsoft Corporation. All other trademarks acknowledged. **teemtalk** and **teem-X** are trademarks of PERICOM SOFTWARE PLC



CIRCLE 95 ON READER SERVICE CARD





**Imperial Technology's IDBU**

option for the MegaRam-SCSI solid-state disk. The company notes that this option provides the MegaRam-SCSI with 192 MB of storage plus disk and battery backup within a single 5 1/4-inch footprint.

The MegaRam Internal Disk Backup Unit (IDBU) combines a 2 1/2-inch Winchester disk, NiCad batteries, battery charger, and power control circuitry on a single MegaRam-SCSI module card that uses two of the six available slots within the MegaRam 5 1/4-inch chassis. In the event of an unscheduled power loss, the IDBU is designed to automatically perform a complete backup of up to 192 MB of data stored in the DRAM modules. The product does a weekly background battery test to determine if the batteries are fully functional and periodically tests the Winchester disk.

The new IDBU runs on HP 9000s and is available directly from Imperial Technology. The unit cost is \$2,500. Contact John Jory, Imperial Technology, Inc., 2305 Utah Ave., El Segundo, California 90245, phone: (800) 451-0666 or (310) 536-0018, fax: (310) 536-0124.

### **Instrumentation Products Catalogue**

National Instruments announced that its new 528-page, full-color 1994 catalogue is now available. The free catalogue describes software and hardware products that engineers and scientists use to develop integrated measurement and instrumentation systems based on HP and other industry-standard computer platforms. Complete ordering, pricing, and warranty information and

a reply card are included.

New products highlighted include multiplatform versions of LabWindows/CVI and LabVIEW application software; updates to the NI-488.2, NI-DAQ, and NI-VXI driver-level software; GPIB controller interfaces; SBus data acquisition hardware; and SCXI signal conditioning modules and accessories.

Contact National Instruments, 6504 Bridge Point Parkway, Austin, Texas 78730-5039, phone: (512) 794-0100 or (800) 433-3488, fax: (512) 794-8411.

### **New From Verity**

#### **Workgroup Technology Agreement**

Workgroup Technology Corporation and Verity, Inc. have announced the signing of a joint worldwide marketing and development agreement. Workgroup Technology and Verity will develop a comprehensive integration strategy for Workgroup Technology's Product Information Management (PIM) System, CMS, and Verity's TOPIC intelligent document retrieval system.

The addition of Verity TOPIC to Workgroup Technology products is intended to provide users more advanced capabilities to find, access, and manage projects and files stored inside CMS, capabilities based on a UNIX client-server platform strategy. HP 9000 Series 700s are supported. The CMS products include CMS/Workflow, a dynamic tool for re-engineering business processes and procedures, and CMS/Pro, designed to manage complex Pro/ENGINEER configurations.

#### **Automated Customer Support**

Aurum Software and Verity have announced a joint sales and marketing partnership to provide Aurum's Customer Resource Planning (CRP) System and Verity's TOPIC for automated customer support and help desk applications.

Aurum's CRP System is designed to automate the complete customer process from the sales lead to the satisfied customer. TOPIC is intended to provide access to support data, regardless of where the information resides on a network.

Contact Verity, Inc., 1550 Plymouth, Mountain View, California 94043-1230, phone: (415) 960-7600, fax: (415) 960-7698.

### **Disk, Tape Subsystems**

Artecon has announced GigaStak 3.5-inch disk and tape subsystems. Features include interlocking "lego-style" stackability, LCD and keypad status I/O, elimination of internal and external cabling, optional and removable hot-plug devices, and power supplies that are removable from the front. GigaStak subsystems are designed to be highly reliable and serviceable under the performance loads of fast SCSI devices.

All GigaStak models use printed circuit



HP RENTALS

HP RENTALS

HP RENTALS

HP RENTALS

HP RENTALS

# HEWLETT-PACKARD

# RENTALS



## WORKSTATIONS

755	750	CRX	433 S	CRX	382	360	332
735	730	CRX-24	425 T	VRX	362	350	330
725	720	CRX-24Z	425 S	GRX	380	345	320
715	710	CRX-48Z	425 E	PVRX	375	340	310
	705	GRX	400 S/T	EVRX	370		

## PLOTTERS

Designjets  
Draftmasters  
Draftpros  
Electrostatics  
Desktops

## PRINTERS

Laserjets  
Deskjets  
Paintjets  
Rugged Writers  
Line Printers

## MISCELLANEOUS

X Terminals  
Scanners  
PC's  
Memory  
Discs  
Test Equipment

TSA is THE place  
for long & short  
term rentals of  
Hewlett-Packard  
equipment.

Ask about our 6-12  
month purchase  
plans!

## 1-800-422-4872



## 713/935-1500

VISA

## Fax 713/935-1555

EMAIL: [INFO@tsa.com](mailto:INFO@tsa.com)

HEWLETT-PACKARD AUTHORIZED RENTAL COMPANY



2040 West Sam Houston Parkway N. • Houston, Texas 77043

THE RIGHT EQUIPMENT. RIGHT NOW.

HP RENTALS

HP RENTALS

HP RENTALS

HP RENTALS

HP RENTALS



cards rather than cables for internal SCSI and power distribution. External AC and SCSI cables are replaced with modular jumper blocks. Typical SCSI lengths can be measured in inches rather than feet as in existing enclosures.

The GigaStak GS1100s' enclosure offers fixed disk and tape at low cost. The GigaStak GS1400s feature LCD and keypad for display and setting of various subsystem parameters. The top-of-the-line GS1500s feature hot-plug removable disk and tape drives for high availability, enhanced portability, serviceability, and security applications. The GS1500s add a front-removable power supply as well.

Contact Gerry MacDonald, Artecon, Carlsbad, California, phone: (800) 872-2783 or (619) 931-5500, fax: (619) 931-5527.

### Graphical Report Writer

Four Seasons Software has announced a graphical version of 4S-Report, a report writer for end users and application developers. Introduced with support for MS-Windows and OSF/Motif, 4S-Report is designed to generate queries and create complex, professional reports that run on UNIX (including OSF/1), MS-DOS, and VMS. 4S-Report was scheduled to ship in the fourth quarter of 1993. A character-based version of 4S-Report is available now.

4S-Report is designed to create reports that access a wide variety of databases including DB2/6000, Informix, Oracle, Ingres, Sybase, Teradata, HP ALLBASE, and EDA/SQL, as well as COBOL, C-ISAM, and ASCII files. The company notes that data can be integrated from multiple, proprietary databases into a single report, without the writing of SQL, and reports created with 4S-Report can integrate legacy data

### System Administration

BREAKaway Software has introduced *Picus*, designed for the day-to-day management of UNIX servers and/or clients. The product can incorporate and complement other third-party system administration software features. A Motif version of the product is available.

*Picus* is designed to monitor multiple machines, workstations, or servers concurrently in any size network. Designed with a layered, client-server approach, each layer of *Picus* is responsible for providing one phase of acquiring, preparing, and presenting data. The application is used as a stand-alone or networked package.

Pricing for *Picus* is \$1,995 per stand-alone version and \$3,995 for network packages.

Contact BREAKaway Software, 165 Post Street, Suite 415, San Francisco, California 94108, phone: (800) 4 SysAdm or (415) 989-3600, fax: (415) 391-0749, e-mail: sales@breakaway.com.

residing on a mainframe.

Pricing for 4S-Report ranges from \$300 to \$37,000, depending on the platform and operating system. Site licenses are available.

Contact Four Seasons, 2025 Lincoln Highway, Edison, New Jersey 08817, phone: (908) 248-6667, fax: (908) 248-6675.

### New from Speedware

#### *SPEEDWARE Version 7.02*

Speedware Corporation has announced SPEEDWARE Version 7.02. SPEEDWARE/Designer now provides support for a remote shared repository, with PC and UNIX-based Designer clients having access to a common UNIX repository server.

Extended Windows support includes bit mapping and MS-Windows action bars and dialogue boxes. Remote Windows, available on the HP 9000, are designed to allow the presentation layer of an

application to run on a PC under Windows while the manipulation of the logic and data is executed on the server. No code changes are required and data integrity and network performance are ensured, the company notes. SPEEDWARE Version 7.02 supports INFORMIX.

Average user-based pricing for a single user development environment starts at approximately \$5,000. Unlimited CPU-based pricing for development and application environments can exceed \$150,000.

#### *EasyReporter 7 on UNIX*

Speedware also announced that EasyReporter Version 7, an end-user report-writing tool, is available on the UNIX platform using ORACLE, SYBASE, ALLBASE, and C-ISAM databases. EasyReporter is designed to work with various PC tools used for monitoring different aspects of a business while requiring only the EasyReporter dictionary. Using Dynamic Data Exchange (DDE), EasyReporter is designed to



**NEW!!**  
8mm SCSI support for  
HP 3000 and 9000/800 systems.

# Opticals by IEM

Clearly a wise  
investment.

Fast, reliable, high capacity storage: the perfect fit  
for HP 1000, 3000 and 9000 SCSI and HP-IB computers.

- Rewritable optical disk drives
- Write-once optical disk drives
- Library Systems and Library System Controllers



CIRCLE 84 ON READER SERVICE CARD



**One Source, Many Solutions**

*IEM is the manufacturer of the largest line of HP third-party peripherals.*

*In the U.S.  
and  
Canada:*  
IEM, Inc., P.O. Box 1889  
Fort Collins, CO 80522 USA  
Phone: (1) 303-221-3005  
(1) 800-321-4671  
Fax: (1) 303-221-1909

*In the  
United  
Kingdom:*  
IEM Europe, Ltd., Colorado House,  
Cromwell Park, Banbury Road,  
Chipping Norton, Oxfordshire. OX7 5SR.  
Phone: +[44] 0608 645000  
Fax: +[44] 0608 645155

*All  
others:*  
IEM International Sales  
1629 Blue Spruce Drive  
Fort Collins, CO 80524  
Phone: (1) 303-221-3005  
Fax: (1) 303-221-1909



# Advertiser's Index

Please call or fill out adjacent card for further product information.

READER SERVICE NUMBER	ADVERTISER	PAGE #	READER SERVICE NUMBER	ADVERTISER	PAGE #
97	<b>Bering Technologies</b> Bering provides a complete line of tape drives, removable cartridges, fixed hard drives, and combination subsystems for HP 9000, 3000 and 1000. Phone: (800) 237-4641/ Fax: (408) 374-8309.	21	94	<b>MiniSoft, Inc.</b> MiniSoft, Inc. develops connectivity software for linking PCs and HP mini-computers serially and via networks to carry out terminal emulation, word processing, electronic mail, data retrieval, and other client-server applications. Phone: (800) 682-0200/ Fax: (206) 668-2435.	37
90	<b>Bradmark Technologies, Inc.</b> The premier developers of data management solutions specializing in HP IMAGE database utilities, now includes our industry standard DBGENERAL for the HP-UX market. Phone: 1-(800) ASK-BRAD/ Fax: (713) 621-2808.	41	85	<b>Newport Digital Corporation</b> Newport Digital manufactures memories, accelerators and analog-to-digital converters for Hewlett-Packard Computers. All products are in stock for immediate shipping. Phone: (800) 383-3642/ Fax: (714) 730-3951.	13
45	<b>Combs International, Inc.</b> Current offerings include X/Motif productivity tools, migration consulting, and data acquisition systems for manufacturing, laboratory, or facility management. Phone: (201) 427-9292/ Fax: (201) 427-3428.	79	95	<b>Pericom, Inc.</b> Pericom provides terminal emulation/Communications software for X11/R5 for all major types of UNIX based workstations. Phone: (609) 895-0404/ Fax: (609) 895-0408.	59
44	<b>Computer Solutions, Inc.</b> CSI supplies the Texas Instruments created indexed file package TISAM on the HP 9000 as well as other UNIX platforms. Phone: (407) 649-0123 or (512) 343-6634/ Fax: (407) 649-1407.	75	91	<b>Quest Software</b> NBSpool for UNIX gives operators and end users a simple yet powerful way of managing output and spooled devices. With NBSpool, the UNIX spooler can easily meet the heavy demands of commercial UNIX applications. Phone: (714) 720-1434/ Fax: (714) 720-0426.	57
53	<b>Concorde Technologies</b> Concorde Technologies offers a full line of Hewlett-Packard mass storage (hard disk, tape, optical, etc), workstations, RAM memory, software and other enhancements for HP computers. Phone: (800) 359-0282/ Fax: (619) 458-0722.	73	73	<b>Robelle Consulting Ltd.</b> Robelle Consulting Ltd. develops software for the HP 3000 and HP 9000 platforms. Among its products is the popular and powerful Qedit full-screen editor. Phone: (604) 582-1700/ Fax: (604) 582-1799.	75
18	<b>C.S.U. Industries, Inc.</b> C.S.U. Industries buys, sells and rents HP and compatible computers, feature/memory upgrades and peripherals. Phone: (516) 239-4310/ Fax: (516) 239-8374.	55	60	<b>S.A.R., Inc.</b> S.A.R., Incorporated is an independent distributor of HP/Apollo workstations. We can supply spare parts, upgrades or custom configure systems. Phone: (508) 521-6656/ Fax: (508) 372-0999.	43
31	<b>Datsys Computer Corporation</b> Datsys offers you a full-line of quality memory products for HP 9000 and HP 3000 systems, including memory products that support HP's 8xx, 9xx and Emerald platforms. Phone: (800) 328-2797/ Fax: (214) 931-9619.	1	69,83	<b>Technical &amp; Scientific Application</b> Call TSA for new, used, and remanufactured HP equipment. Buy, sell, rent or lease, TSA specializes in HP 9000. Phone: (800) 422-4872/ Fax: (713) 935-1555.	61,79
87	<b>Design 3000 Plus, Inc.</b> Supplier of Data Center Management tools for HP MPE and UNIX systems. Specializing in batch job scheduling and system environment monitoring plus job status notification. Phone: (503) 585-0512/ Fax: (503) 585-1706.	27	49	<b>Ted Dasher &amp; Associates</b> Ted Dasher & Associates specializes in new, used, and remanufactured HP 9000 equipment. Phone: (800) 638-4833/ Fax: (205) 591-1108.	45
86	<b>Disk Emulation Systems, Inc.</b> Disk Emulation Systems Inc. is the leading manufacturer of ultra-high-performance, non-volatile solid state disks. Phone: (408) 727-5497/ Fax: (408) 727-5496.	77	89	<b>Telamon</b> Telamon provides system management solutions; alarm, notification, escalation and remote access tools; and synchronous communications tools including 2780/3780 RJE and 3270 functions for HP 9000s and HP 3000s. Phone: (916) 622-0630/ Fax: (916) 622-0738.	43
70	<b>FutureSoft</b> FutureSoft develops the DynaComm family of products—Windows software products offering communications and terminal emulation across multi-platform networks and serial links to host computers. Phone: (713) 496-9400, (800) 989-8908/ Fax: (713) 496-1090.	29	22	<b>Texas ISA, Inc.</b> Since 1979 ISA has been manufacturing various peripherals for the Hewlett Packard 9000 series 200/300/ 400/700/800 workstations and file servers. Phone: (713) 493-9925/ Fax: (713) 493-2724.	37
	<b>Genstar Rentals</b> To meet immediate and short-term needs, rent from our \$75+ million inventory of HP, Sun, Tadpole, BriteLite, Apple, Compaq, IBM, etc. Phone: (800) 422-3300/ Fax: (214) 386-7789 and in Canada (800) 387-6646.	71	23	<b>Tryonics, Inc.</b> Tryonics Inc. is a provider of quality remanufactured HP/Apollo, Apollo Domain series workstations, spare parts, network and software consulting services. Call (800) 551-6236/ Fax: (603) 427-6843.	Inside Back Cover
04	<b>Herstal Automation Ltd.</b> Famous for our high capacity memory on HP 1000 computers, we have solutions for 3000s and 9000s, too. Products include unattended tape backup, disks up to 2 gigabytes, workstation memory and specialty device drivers. Phone: (313) 548-2001/ Fax: (313) 548-2010.	17	92,93	<b>UniDirect</b> UniDirect is the #1 name in name-brand UNIX software, with the "We Will Not Be Undersold" guarantee. Phone: (800) 755-8649/ Fax: (714) 707-3095; International call (714) 453-2999.	Inside Front Cover/4
96,82	<b>Holland House</b> Holland House specializes in products for multi-platform environments. Products offered are for network spooling and data-center management and control. Phone: (512) 288-7540/ Fax: (512) 288-4240.	31,67	68	<b>Unison-Tymlabs Corporation</b> Unison-Tymlabs' suite of integrated systems management products allow the user to automate essential information systems tasks for maximum efficiency and cost savings. Phone: (408) 245-3000 or (512) 478-0611/ Fax: (512) 479-0735.	33
64,84	<b>IEM, Inc.</b> Manufacturer and developer of HP compatible hardware including optical disk drives, back up tape drives, library system controllers, hard disk drives, memory boards and interface products. Phone: (800) 321-4671/ Fax: (303) 221-1909.	9,63	55	<b>V-Systems, Inc.</b> VSI-FAX enables UNIX computers to send, receive, print, log and display fax documents. Fax capabilities can be integrated into virtually any UNIX application. Phone: (714) 545-6442/ Fax: (714) 545-7653.	23
66	<b>Innovus Inc.</b> NetWorker for HP 9000 offers high-speed heterogeneous network-wide backup and recovery capabilities using a client/server architecture. Phone: (905) 529-8117/ Fax: (905) 572-9586.	7	40	<b>VESOFT, Inc.</b> VESOFT creates system software for the Hewlett-Packard installed base and has been providing system security control and auditing software since 1980. SecurityAudit/UX allows system managers to quickly and easily monitor their HP-UX systems for security weaknesses and aids in closing security loopholes. Phone: (310) 282-0420/ Fax: (310) 785-9566.	45
81	<b>International Hewlett-Packard Users Conference</b> Maastricht, The Netherlands 10-14 /April 1994. Phone: +31 (20) 679 3218/ Fax: +31 (20) 675 8236.	69	88	<b>Walker, Richer &amp; Quinn, Inc.</b> WRQ (Walker, Richer & Quinn, Inc.) develops and markets Reflection software—PC products for terminal emulation, networking, and development tools. Phone: (800) 92 NETWORK/ Fax: (206) 4322-8151.	Back Cover
78	<b>ITAC Systems, Inc. - Mouse-trak</b> Mouse-trak is designed for HP users looking for a reliable input device that reduces the risk of repetitive motion injuries that can be caused by the conventional mouse. Phone: (214) 494-3073/ Fax: (214) 494-4159.	3			

facilitate the distribution of data from the corporate computer to the PC. Data exchange file formats for PC products also have been created.

According to the company, Easy-Reporter has the look and feel of PC products and incorporates accelerator keys, pull-down menus and lists, point-and-click operations, a customized tool bar, and push, radio, and check buttons.

Contact Speedware Corporation, 150 John Street, 10th Floor, Toronto, Ontario M5V 3F3, Canada, phone: (416) 408-2880, fax: (416) 408-2872.

### Authorized HP Rental Company

Technical & Scientific Application (TSA), Inc. and Hewlett-Packard have entered into an agreement that establishes TSA as a Hewlett-Packard authorized rental company. TSA has specialized in the rental, resale, and lease/purchase of HP workstations and peripherals for over eight years.

According to TSA, becoming a Hewlett-Packard authorized rental company allows it to complement an already extensive rental department with the latest workstations such as the HP 9000 Series 755, 735, 725, and 715. High-end graphics packages, including CRX 48Z, CRX 24Z, and CRX also are immediately available.

All equipment is available for short- or long-term rental and for six- or twelve-month lease/purchase programs. Contact TSA, Inc., 2040 West Sam Houston Parkway North, Houston, Texas 77043, phone: (800) 422-4872 or (713) 935-1500, fax: (713) 935-1555.

### Client-Server Accounting

CODA, Inc. has announced the Open Accounting System (OAS), designed to run on any POSIX-compliant computer



### Session/Window Manager

Structured Software Solutions, Inc. has announced the general availability of FacetTerm Version 3, a session and window manager for terminals and PCs connected to UNIX platforms. The new version is available on all major UNIX platforms, including the HP 9000, and includes several functional enhancements.

The Window Watch feature in Version 3 is designed to detect and monitor off-screen events and is intended to be completely configurable. This ability to monitor and alarm off-screen events is not currently available through character, AlphaWindow, or X Window terminals, the company notes.

FacetTerm Version 3 also includes a screen saver function and a separate screen-lock security feature. FacetTerm is designed to enable character terminals, AlphaWindow terminals, and PCs to access any UNIX host and run up to 10 simultaneous sessions.

Version 3, available through resellers, begins at \$495.

Contact Structured Software Solutions, Inc., 4031 W. Plano Parkway, Suite 205, Plano, Texas 75093, phone: (214) 985-9901, fax: (214) 612-2035.

with the leading SQL databases. The OAS client runs as a native application under Windows 3.1, so local processing on the PC is achieved for those functions selected as client-resident tasks. OAS also supports character terminals, X-terminals running Motif, and UNIX- and POSIX-compliant servers.

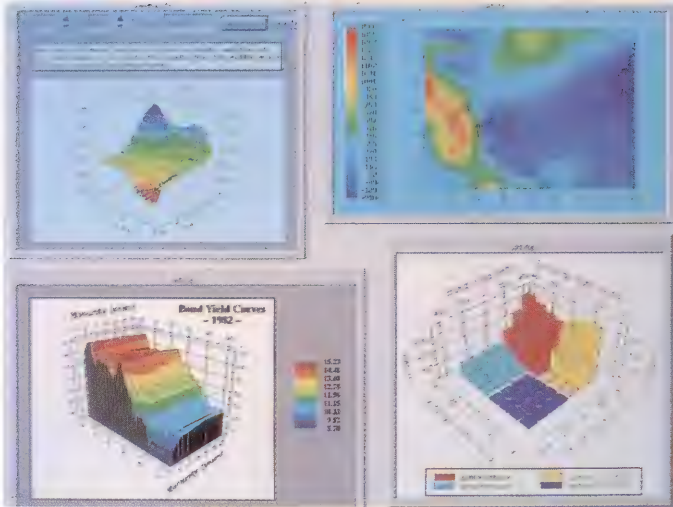
OAS offers a single-database structure and real-time transaction processing for complete integrity of

mission-critical financial data. The OAS Kernel contains the business rules and is portable and distributable. The product offers multilingual, multicompany, and multicurrency capabilities and is fully compliant with FAS 52 and other international accounting standards. OAS also permits a 90-character account structure with eight user-definable levels.

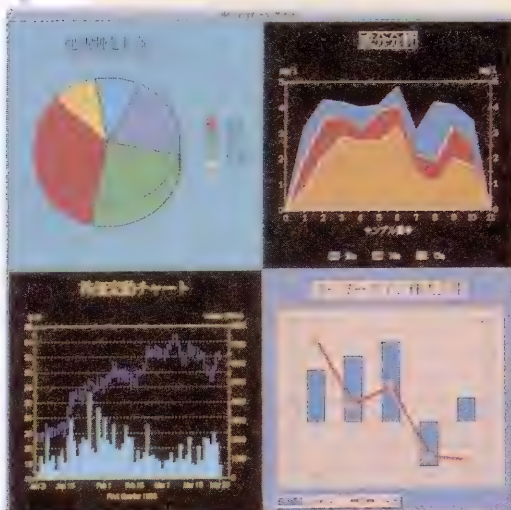
OAS is designed to interface with PC



### New from KL Group



KL Group's XRT/3d



KL Group's Japanese version of XRT/graph

### Enhanced 3-D Development Tool

KL Group Inc. has announced the release of XRT/3d Version 2.0, a three-dimensional graph widget toolkit for X Window System developers. There are no royalties or run-time fees for distribution of end-user applications built with XRT/3d. XRT/3d can represent three-dimensional data in a wide variety of graph types, including surfaces, bar charts, and contour graphs. XRT/3d features new graph types, interactive rotation, axis labeling that supports more advanced methods of annotation, CGM output, and the ability to handle new data formats.

XRT/3d uses the same object-oriented API as the OSF/Motif. XRT/3d 2.0 is published on the XRT Product CD, which contains all XRT widgets for nine UNIX architectures, including HP 9000 Series 300, 400, 700, and 800 platforms. XRT/3d lists for \$2,495.

### Japanese Version Graph Widget Toolkit

KL Group Inc. and Tangent Computing Ltd. have announced a fully localized Japanese version of XRT/graph for OSF/Motif, including Kanji font support and Japanese documentation. A single-user development license sells for JPY435,000 and is available exclusively to X developers through the Tokyo-based Tangent. There are no runtime fees or royalties for distributing end-user applications built with XRT/graph.

XRT/graph is designed to enable developers to embed virtually any type of two-dimensional graph. It supports several advanced features, including real-time updates, time and data axis, and user feedback. XRT/graph includes Builder for prototyping and generating code.

Contact Tangent Computing, 6-9-11 Jingumae #203, Shibuya-ku, Tokyo, Japan 150, ph: (+81) 3-3409-5364, fax: (+81) 3-3409-0147; or KL Group Inc., 134 Adelaide St. E., Suite 204, Toronto, Ontario, Canada M5C 1K9, phone: (416) 594-1026, fax: (416) 594-1919.

spreadsheets like Microsoft Excel, Lotus 1-2-3, and Quattro Pro. OAS is also intended to offer reporting and query capabilities for detail-level and analytical reporting.

OAS is available on HP 9000 servers with Sybase, Ingres, or Oracle relational databases. OAS supports TCP/IP, DECnet, Novell Netware, Banyan Vines, Microsoft LAN Manager, and other networking protocols. Pricing of OAS ranges from \$35,000 to \$350,000, depending on number of users and configuration.

Contact Nancy Pieretti or Megan Briggs, CODA, phone: (603) 647-9600.

#### BEST/1 for UNIX

BGS Systems, Inc. has announced the general availability of BEST/1 for UNIX, designed to provide facilities to centralize the performance and capacity management functions in distributed environments. This product integrates into the BGS Performance Assurance framework to enable solution of day-to-day performance problems by generating automated exception reports, tracking long-term performance of business-oriented workloads, projecting future requirements, and reporting to management and users on past, present, and future performance.

BEST/1 for UNIX will be available on HP platforms in early 1994.

Contact BGS Systems, Inc., 128 Technology Center, Waltham, Massachusetts 02254-9111, phone: (617) 891-0000, fax: (617) 890-0000.

#### HP 3000 Migration to UNIX and ORACLE

International Digital Scientific Inc. has announced CAST/MPE, a computer-aided software translator designed to move Hewlett-Packard

## If Network Printing Problems Are Giving You Nightmares...



## You Need UNISPOOL!

**Networked printers can cause as many problems as they solve.**

That's why UNISPOOL was designed to meet your specific network printing problems. UNISPOOL offers solutions to problems associated with network environments where there are diverse applications, multiple printing resources and little room for error. UNISPOOL can manage your spoolfiles effectively, efficiently, and securely even in mixed computing environments.

UNISPOOL is installed on thousands of machines throughout the world and is used by 40% of America's Fortune 500 companies.

UNISPOOL is available on a wide variety of operating systems and PC servers:

- HP MPE V/XL
- IBM AIX
- LAN Manager OS/2
- HP HP-UX
- SCO UNIX
- NOVELL
- HP/Apollo DOMAIN
- DEC ULTRIX

If you have nightmares just thinking about your network printing environment, contact us for a *free* demonstration.

**UNISPOOL — The World's Premier Network Printing Solution.**

NORTH AMERICA  
Holland House  
P.O. Box 91027  
Austin, TX 78709  
Tel: (512) 288-7540  
Fax: (512) 288-4240



EUROPE  
Holland House bv  
Molenkempweg 1  
5306 ZX BRAKEL  
Netherlands  
Tel: +31 (4187) 3000  
Fax: +31 (4187) 3060



## New from UniPress Software, Inc.

### *Source Code Manager*

UniPress Software, Inc. has announced a new version of Source Code Manager (SCM) for X. SCM is designed for managing the source and binary files of multi-programmer projects and now features full X Windows support. SCM also features file access management, release revision tracking, and easy program administration. SCM is designed to keep all files available to all programmers at all times.

Source Code Management for X is available for HP and other platforms and is priced at \$795 for one user, \$3,295 for five users, and \$5,995 for 10 users. Site license pricing is also available.

### *PC-UNIX e-mail*

UniPress also has announced Mail-it 2.0, developed by Unipalm, Ltd. Mail-it 2.0 is a Windows interface to UNIX/Internet mail. The product includes full support for MIME (Multimedia Internet Mail Extensions RFC 1341) and both Simple and Extended MAPI (Microsoft's Messaging API for Windows).

With MIME, users can now use Mail-it 2.0 to mail large binary files between UNIX and PC machines.

Mail-it 2.0 is available for all MS Windows PCs and is priced at \$395 for five users and \$695 for 10 users. Site license pricing is available.

Contact UniPress Software, 2025 Lincoln Highway, Edison, New Jersey 08817, phone: (908) 287-2100, fax: (908) 287-4929.

COBOL, TurboIMAGE, and VPlus applications from MPE to open systems. With UNIX as a target, HP COBOL can be translated into either MicroFocus COBOL or AcuCOBOL, and TurboIMAGE databases can be translated into ORACLE or INFORMIX, ISDI notes.

Contact Ed Offstein or David Young, International Digital Scientific, Inc., 28460 Avenue Stanford, Suite 100, Valencia, California 91355, phone: (805) 295-1155, fax: (805) 295-8755.

## Network Power Management

Network Security Systems Inc. (NSSI) has announced LanSafe II 3.0 network power management software for Novell. New features include NetWare 4.0 support, multiple file server support from a single uninterruptible power supply (UPS), multivendor UPS support, enhanced security scheduled shutdowns, and graphing capabilities.

Charting and graphing voltage log information using Microsoft Excel or

Lotus 1-2-3 now is possible as well. Available now, LanSafe II for Novell with DOS or Windows workstations is priced at \$135.

NSSI also has announced Version 2.00 of LanSafe II for UNIX. The new version provides support for UnixWare 1.0, HP-UX, and other UNIX operating systems. LanSafe II for UNIX 2.00 is priced at \$149 and is available now.

NSSI's UPSs and LanSafe II software are designed to work in tandem, on heterogeneous UNIX networks.

Contact Network Security Systems Inc., 9401 Waples Street, San Diego, California 92121, phone: (619) 587-7950 or (800) 755-7078, fax: (619) 552-9162.

## Backup Librarian Software

Spectra Logic has announced that its Alexandria Backup Librarian Software will support Exabyte's EXB-10e and EXB-60 8-mm Cartridge Handling Subsystems, in addition to the EXB-10i and EXB-120.

The software is designed to manage data on automated media changers and to completely automate the Exabyte tape libraries, from automatically starting scheduled store operations to managing data, media, and device maintenance across an entire network. Alexandria automates backup across heterogeneous UNIX networks that include the HP 9000.

Contact Spectra Logic, 1700 N. 55th St., Boulder, Colorado 80301, phone: (303) 449-7759 or (800) 833-1132, fax: (303) 939-8844, e-mail: alexandria@spectra.wali.com.

## Enterprise Management

API International has released Vantage 2.0, a resource monitor and control system designed to deliver worldwide

# State of the Art



Maastricht, The Netherlands  
10~14 April 1994

## International Hewlett-Packard Users Conference



Painting the Future



Secretariat International Hewlett-Packard Users Conference  
c/o Lidy Groot Congress Events  
P.O. Box 83005 • 1080 AA Amsterdam • The Netherlands  
Tel: +31 (20) 679 3218 • Fax: +31 (20) 675 8236



## New from IDE

### *Information Modeling*

Interactive Development Environments (IDE) has announced Software through Pictures Information Modeling (StP/IM) on HP 9000 Series 700 workstations and others. StP/IM is an information modeling toolset providing comprehensive support for client-server development and is designed to enable building conceptual and logical models, generating SQL for popular RDBMSs, and deploying the resulting applications on virtually any platform. The data modeling facilities in StP/IM can help users manage the information storage and access aspects of client-server development. StP/IM supports industry standard graphical user interface guidelines and CASE frameworks.

StP/IM is designed to support capturing the conceptual model of the data, extracting the appropriate subsets to create a logical model, and building a graphical preview of the physical model. Applications created with StP/IM are independent of the target database or platform.

StP/IM licenses are available for \$15,000 per user. A five-seat "Success Package," including software, consulting, training, and one year of maintenance, is available for \$100,000.

### *Object Modeling Technique Tools*

IDE and the Advanced Concepts Center (ACC) of Martin Marietta (formerly GE Advanced Concepts Center) announced availability of StP Object Modeling Technique (OMT) tools and OMT Success Packages. These new offerings are designed to provide comprehensive object-oriented software development solutions for deploying GE's Object Modeling Technique methodology. StP/OMT is intended to enable users to clearly define a project's problem domain, create complete object- and system-level designs, and reuse existing class structures to create high-quality applications.

StP/OMT is based on IDE's Release 5.0 architecture. As with all Software through Pictures products, StP/OMT supports multiple users in an open environment, with a shared repository, version control and locking, consistency checking, inter-model navigation, and code and document generation.

StP/OMT licenses are available for \$12,000 per-user. Success Packages are available for development teams ranging from 5 to 10 users for \$100,000. Releases on HP 9000 Series 700/800 were scheduled for fourth quarter 1993.

Contact IDE, 595 Market Street, 10th Floor, San Francisco, California 94105, phone: (415) 543-0900 or (800) 888-IDE1, fax: (415) 543-0145.

the software is sold with an HP 9000 workstation. Vantage 2.0 is part of the AutoPac automation suite sold by API International.

For demonstration copies, pricing, and more information, contact API International, P.O. Box 91027, Austin, Texas 78709, phone: (512) 288-7540, fax: (512) 288-4240.

### **C-ISAM Bridge**

Recital Corporation has announced the immediate availability of RECITAL C-ISAM Bridge, designed as a replaceable database driver to C-ISAM data. The data now may be accessed through the Information Center, providing GUI-like, menu-driven operations.

Application developers and end users may work in their UNIX system while accessing C-ISAM data transparently over Ethernet networks supporting TCP/IP. Xbase applications can share C-ISAM data. The C-ISAM Bridge can also access Oracle, Rdb, RMS, and TurboIMAGE databases.

Recital offers a free technical overview brochure and a free 30-day RECITAL evaluation kit for qualified prospects.

Contact Recital Corporation, 85 Constitution Lane, Danvers, Massachusetts 01923, phone: (508) 750-1066, fax: (508) 750-8097.

enterprise management from coordinated, single-footprint consoles. The software listens in on data traffic between systems and consoles, using an exclusive serial access hardware device to route multiple consoles' messages to a central HP VUE screen, the company notes.

Version 2.0 lets companies with geographically dispersed systems request data center control from remote sites. The Non Event Display (NED) is designed to exclude nonessential messages.

Vantage 2.0 monitors any system operated from an RS-232 interface, but

### E-Mail and Fax Integration

Siren Software has announced Siren Mail, an Internet e-mail and fax communications center for HP 9000s and other open platforms. Siren Mail offers Motif and window-based character interfaces and uses standard TCP/IP and UNIX mail transports, RFC822/MIME Internet protocols, and fax servers to send mail messages and documents anywhere in the world.

Users can indicate a separate routing method for each recipient of a message, view and actively manage messages from multiple folders, and simultaneously compose messages. Siren Mail also provides a folder manager.

Siren Mail provides search-and-sort capabilities, a customizable interface, a built-in message editor that automatically formats the text of messages as users enter them, and an address book for tracking e-mail addresses and fax numbers. A character version is available.

A single-user license of Siren Mail is priced at \$295, a 5-user license is \$1,395, and a 10-user license is priced at \$2,495.

Contact Siren Software Corporation, 750 Menlo Avenue, Menlo Park, California 94025-4735, phone: (800) 45-SIREN or (415) 322-0600, fax: (415) 322-9999, e-mail: info@siren.com.

### Client-Server Toolset

Cognos Inc. has announced Axiant, intended to offer users an architecture for building, deploying, and maintaining complex enterprise client-server applications. It offers users an integrated, visual development environment built around a multi-user, object-oriented repository. Running under Microsoft Windows, initial programs and forms can be created entirely through a point-and-click interface, the company notes.

Now Offering HP Apollo Series 700 Workstations

## Facing a Backbreaking Deadline?



### Rent from Genstar and Rise to the Occasion

Need a workstation now? Meet your immediate and short-term deadlines by getting the HP, Sun, Tadpole and Britelite equipment you need overnight.

Smart managers know renting frequently offers more advantages than buying capital equipment. You can customize a rental at Genstar — all from an industry leader for more than 25 years.

Why wait? Call now and stay on schedule.

U.S. 1-800-422-3300

Canada 1-800-387-6646



**GENSTAR  
RENTALS**  
What you need when you need it

PCs, Workstations & Electronic Test Equipment for Business



## New from Central Data

### *Serial I/O*

Central Data Corporation has introduced what is said to be the first serial I/O solution for RISC workstations and servers to support transfer speeds of 230 kilobaud. The new dual-processor ST-1600 scsiTerminal Server supports eight asynchronous serial ports running 230 kilobaud simultaneously, or 16 ports at 115 K. The ST-1600 is also said to improve overall system performance by significantly offloading the host CPU. The product also has implemented full hardware flow control, intended to guarantee proper modem handling even with fast V.32 modems. The ST-1600 also connects serial X terminals.

The ST-1600 scsiTerminal Server connects to an external SCSI port without consuming a system card slot. Daisy-chaining multiple ST-1600 units allows adding from 16 to 112 serial ports from a single SCSI bus, the company notes. The ST-1600 can also be integrated with other members of Central Data's scsiServer family.

Software drivers for HP 9000 Series 700s and 800s and other platforms are available. The domestic end-user price for the ST-1600 is \$1,995 in single quantities.

### *Hot SCSI Switch*

Central Data also has announced the SS-924 Hot SCSI Switch, designed to allow users to alternate between two SCSI buses by the simple flip of a switch, whereby the disconnected SCSI branch is automatically terminated to ensure error-free operation. Combined with Central Data's hot unit recovery firmware, the Hot SCSI Switch makes replacing, upgrading, or adding scsiServer serial and parallel ports a safe, simple procedure, the company notes.

scsiServers interface to an external SCSI port and can share the SCSI bus with other SCSI peripherals or other scsiServer models. A hot replacement (replacing scsiServer already installed without rebooting) is available for HP 9000 Series 700s and is planned for Series 800s. The Hot SCSI Switch can be ordered directly from Central Data. The end-user price for the SS-924 Hot SCSI Switch is \$995. The firmware supporting hot unit recovery is provided free with each scsiServer.

Contact Mark Decker, Central Data, 1602 Newton Drive, Champaign, Illinois 61821-1098, phone: (217) 359-8010 or (800) 482-0315, fax: (217) 359-6904, e-mail: info@cd.com.

No procedural code is required for development or maintenance.

The Axiant development environment is designed to automate application development. The developed applications can be deployed to a workgroup of 12 users and across the enterprise to support hundreds of concurrent users. The application engine automatically manages the scaling of users, the company notes.

The Windows-based development environment costs between \$3,000 and \$5,000. Full deployment of Axiant will cost under \$1,000 per user. It will be available in the second quarter of 1994.

Contact Cognos at phone: (617) 229-6600, ext. 2446.

## Custom Order Program

The Commercial Systems Group of Arrow Electronics, Inc. has implemented a custom order program for HP 9000 Series 700s and Series 800s. Through the Custom Integration Program, HP factory-trained and certified Arrow technicians will configure, install, and test HP workstation and server products to the exact specifications of value-added resellers.

Arrow has provided custom hardware solutions for a variety of computer products for more than 23 years through Arrow Electronics, Inc.'s Custom Computer Products Division (CCP) and its Commercial Systems Groups' Customized Order Program. The Custom Integration Program marks the first custom configuration service specifically for HP workstations and business servers, the company notes.

Contact Arrow Electronics, Inc., 25 Hub Drive, Melville, New York 11747, phone: (516) 391-1300, fax: (516) 391-1401.

# Everything For Your HP, For Less!



Concorde Technologies offers a comprehensive line of HP computers, mass storage peripherals, memory upgrades, accessories and software. All with excellent availability, free technical support and the best possible prices.

**We're Your "Hewlett-Packard Experts"**  
**(800) 359-0282**

**CONCORDE TECHNOLOGIES**

6370 Lusk Blvd., Suite F100  
San Diego, CA 92121  
(619) 458-0702  
FAX: (619) 458-0722

VISA  
MasterCard

CIRCLE 53 ON READER SERVICE CARD

## new products

### Office Productivity

Grafpaint, Inc. has announced an agreement to distribute XALT Office, which contains five integrated applications—desktop, calendar, notes, electronic mail, and people management modules—that run under X-Windows on UNIX workstations.

The agreement encompasses worldwide distribution and future technology rights to the XALT Office products for UNIX workstations. The software runs on HP 9000 Series 700/800s. Grafpaint is integrating its own technology, allowing XALT to be accessed by networked desktop PCs under MS Windows.

The product costs \$150 per user in

small volumes to less than \$50 per user in significant volume.

Contact Grafpaint, 1485 Saratoga Avenue, San Jose, California 95014-4934, phone: (408) 446-1919 or (800) 426-2230.

### PC X Server Software

AGE Logic, Inc. (AGE) has announced Xoftware/32, Version 3.0, which is 32-bit PC X server software including a full suite of new utilities and features targeted toward the PC user who needs to access UNIX applications. Xoftware/32 for Windows, Version 3.0, is optimized for Microsoft Windows and is designed to enable users to concurrently access and display MS Windows, DOS, and

networked-based UNIX applications on the same PC.

New features include a comprehensive Network File Manager utility with file transfer and local printing capabilities, a Concurrent Window Manager mode for simultaneous use of both local and UNIX window managers, a fully interactive Telnet client, and a Windows-OS/2 based Trace utility.

It supports all leading TCP/IP and WINSOCK-compatible networks. Xoftware/32 for Windows, Version 3.0, was scheduled to begin shipping the end of October, 1993. It lists for \$395 and a version incorporating Novell's TCP/IP network software will be available for



## New from Uniface

### *Montage Object-Relational DBMS Support*

Uniface Corporation and Montage Software, Inc., have announced a joint technology and marketing agreement under which the companies will work to integrate the UNIFACE client-server development environment with the Montage object-relational database management system. UNIFACE support of Montage will enable developers to build enterprise client-server applications that can use any complex data type, including audio, video, photographic images, and CAD files, Uniface notes.

UNIFACE is a cross-platform, client-server development environment employing a model-driven approach. UNIFACE is currently available for HP-UX, HP MPE/iX, MS-DOS, MS-Windows 3.1, and other proprietary and UNIX-based operating systems. UNIFACE provides simultaneous access to a wide variety of flat-file, text-based, and relational DBMSs.

### *CASE Initiative*

Uniface also announced that 16 leading CASE tools have been integrated with the UNIFACE enterprise development environment. The company is shipping UNIFACE CASE Enablement Packs that include a CASE bridge, UNIFACE Model Synchronizer, and documentation.

UNIFACE Model Synchronizer is designed to ensure that the CASE tool's repository and the UNIFACE application repository continuously mirror each other.

The company provides message-based links between UNIFACE and other tools via Hewlett-Packard SoftBench, IBM SDE/WorkBench, and DEC FUSE.

UNIFACE CASE Enablement Packs are available through Uniface Corporation or third-party vendors. Pricing ranges from \$3,000 to \$15,000, depending on CASE bridge, platform, and configuration.

Contact Uniface Corporation, 1320 Harbor Bay Parkway, Suite 100, Alameda, California 94501-6556, phone: (510) 748-6245 or (800) 365-3608.

Uniface offers the application development tool. Working together, the companies will build portable applications for business users developing client-server, mission-critical applications.

IISI is a full-service system integration and consulting firm specializing in midrange computing solutions, client-server, UNIX and open systems, and mainframe alternatives. Uniface is a provider of high-performance tools designed for building and deploying business-critical MIS applications on a wide range of hardware and software platforms.

Contact IISI, 320 Norwood Park South, Norwood, Massachusetts 02062-9891, phone: (617) 769-7511, fax: (617) 762-5164.

## Business Software

RBS Group has announced SOFTRAX, a UNIX-based, hardware-independent system specifically designed for software manufacturers and distributors. It is designed to track installations, licenses, support calls, prospects, and inventory and process orders.

The product is developed in a 4GL with CASE tools, runs on SQL-based relational databases, and is supported on HP 9000s and other open systems.

SOFTRAX is available immediately and is priced from \$1,000 to \$1,500 per user, depending upon hardware platform.

Contact The RBS Group, Inc., 220 Forbes Road, Braintree, Massachusetts 02184, phone: (617) 848-3927, fax: (617) 848-4345.

\$495. Multi-Pack pricing and site licenses are available.

Contact AGE Logic, Inc., 9985 Pacific Heights Blvd., San Diego, California 92121, phone: (619) 455-8600, fax: (619) 597-6030.

## IISI and Uniface Agreement

Innovative Information Systems, Inc. (IISI) recently signed an agreement with Uniface Corporation. In the partnership, IISI offers business application development and design know-how, and

## List Management

Postalsoft Inc. has announced Merge/Purge Custom, designed for companies that specialize in sophisticated list management and direct mailing.

The product is a programmable extension of Postalsoft's current Merge/Purge Plus product, designed to allow users to perform specialized merge/purge operations by writing their own routines in the C programming language. The software is intended to enable users to exit normal processing, run a routine they've written, and re-enter normal processing with the results from that routine. Merge/Purge Custom runs on several UNIX computers, including HP 9000s.

Contact Postalsoft Inc., 4439 Mormon Coulee Road, La Crosse, Wisconsin 54601-8231, phone: (608) 788-8700, fax: (608) 788-1188.

### Workload Management

Unison-Tymlabs has announced Maestro Version D.01, workload management software for MPE, UNIX, and heterogeneous networks that provides UNIX-based control of processing. For MPE and HP-UX systems, Maestro D.01 allows the master process that manages the network-wide workload to be run on a UNIX host, with slaves running on both MPE and UNIX systems. (Previous versions required that the master process run on an MPE system.) The new release also supports TCP/IP networks, eliminating the need for DS lines between master servers and slave server.

Maestro is designed to increase system throughput and reduce processing errors by automating network job scheduling, tracking, and monitoring. It automatically handles interdependencies between jobs, including those running on different CPUs.

Contact Unison-Tymlabs, 675 Almanor Avenue, Sunnyvale, California 94086, phone: (408) 245-3000, fax: (408) 245-1412, e-mail: info@unison.com.

# Is your data in an ISAM or Informix SE format? You need ISAMATION!

- **ISAMATION** fixes damaged files.
- **ISAMATION** gives very fast, in place compression of data file and reorganization of index file.
- **ISAMATION** gives significant reduction of disk space requirements.

For more information on the ultimate ISAM maintenance and data recovery tools, contact:



### Computer Solutions, Inc.

120 E. Marks St. • Suite 225 • Orlando, FL 32803  
1-407-649-0123 or 1-512-343-6634  
FAX 1-407-649-1407

CIRCLE 44 ON READER SERVICE CARD

## Introducing:

## QEDIT/UX



### Our favorite HP 3000 Full-Screen Editor is now Available on HP-UX

For fifteen years HP 3000 users have been enjoying the speed, flexibility and ease of use of Qedit. That power is now available on HP-UX, with the same full-screen and command modes that you already know how to use.

If you are converting to HP-UX you can be productive immediately. Qedit uses all the functions of your HP terminal or emulator, so there are no complicated key sequences to learn.

The only problem you may have is forgetting which system you are using, MPE or HP-UX; Qedit is so similar on both.

### CALL US FOR A FREE TRIAL

**Robelle**  
CONSULTING LTD.

Unit 201, 15399-102A Avenue Phone: (604) 582-1700  
Surrey, B.C. Canada V3R 7K1 Fax: (604) 582-1799

United Kingdom..... 44 71 473 2558  
Scandinavia..... 46 8 623 0050  
Netherlands..... 31 4242 15655  
France..... 33 1 69866 000  
Austria/Switzerland..... 41 31 340 666

Germany..... 49 7621 78041  
South Africa..... 27 21 61 9001  
Australia, New Zealand..... 61 2 484 3979  
Hong Kong..... 852 527 8868  
Taiwan..... 886 2 322 2166

Central America..... 502 2 314786  
Greece..... 30 1 777 0561  
Mexico..... 52 5 813 1325  
Singapore..... 65 441 2688  
Saudi Arabia..... 966 1 477 4555  
Czech Slovak Rep..... 42 2 733 432

CIRCLE 73 ON READER SERVICE CARD



## New from Cincom

### *CONTROL:Manufacturing*

Cincom Systems, Inc. has announced the immediate availability of six additional CONTROL:Manufacturing (C:M) modules for the UNIX environment. The new UNIX modules include Cost Management, Actual Cost System, Order Management, Accounts Receivable, Accounts Payable, and Project Cost Control (PCC). C:M is available on the full range of HP 9000s.

Cincom will also deliver a new version of SITE:Link for UNIX, which is intended to provide a cooperative processing environment in support of site-to-site communications within a distributed multi-site implementation of C:M.

The Enterprise Analyst Series for C:M now includes the Inventory Analyst, which organizes and structures inventory information for analysis of operations performance and inventory management effectiveness.

Cincom also announced availability of EDI:Link, an application that extends C:M to facilitate the processing of purchase orders, purchase order changes, and invoices.

### *XpertRule Version 2.1*

Cincom Systems, Inc. also announced the availability of XpertRule Version 2.1 with enhanced graphical knowledge capturing, refined source code generators, and forms-based, end-user facilities.

XpertRule is a Microsoft Windows-based knowledge specification and application generation system designed to allow users to quickly develop, prototype, and refine applications requiring complex decision processes.

XpertRule can run stand-alone on a PC and generate program source code in COBOL, C, Pascal, and MANTIS (Cincom's application development language, and component of AD/Advantage) for deployment to other systems.

XpertRule on Windows is priced at \$990. Evaluation copies are available for \$49. For a limited time, Cincom is offering an upgrade for \$495 to users of selected PC knowledge-based systems.

Contact Cincom Systems, Inc., 2300 Montana Avenue, Cincinnati, Ohio 45211-3899, phone: (513) 662-2300, fax: (513) 481-8332.

## Computer-Based Training

SRA Technology Training and FirstClass Systems have announced what is reported to be the first CD-ROM-based, quick-response training delivery technology. EdStart enables users to access a comprehensive library of computer-based-training courseware for information technology professionals and end users.

Contact SRA Technology Training Company, 155 North Wacker Drive, Chicago, Illinois 60606-1780, phone: (312) 984-7000, fax: (312) 984-7168.

## Project Management

National Information Systems, Inc. (NIS) has announced the ACCENT GraphicVUE Project Management System, Version 1.50. Version 1.50 supports OPEN LOOK and Motif, multiple-directory file processing, a Granada Enhanced Graphics option, enhanced spreadsheet editing, networked license management through the FlexLM License Manager, summary activity support, and time-now/time-remaining schedule display.

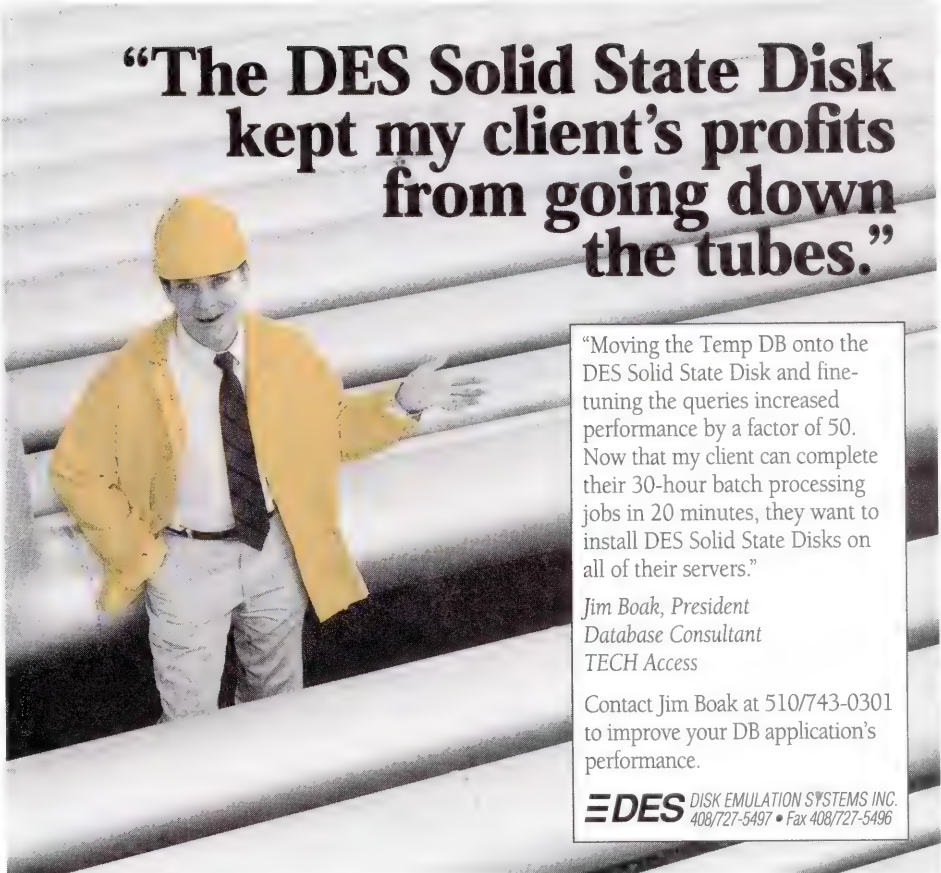
Planning functions can be distributed to those individuals who are most familiar with the details of the project. The product is designed to graphically communicate this project information over the network.

ACCENT GraphicVUE is available on HP 9000 Series 700 workstations running HP-UX Version 8.05 or greater. ACCENT GraphicVUE, Personal Edition, is priced from \$995 with a 60-day money back guarantee. The network version of ACCENT GraphicVUE, which includes multiple-project processing, starts at \$2,495.

Contact NIS, 4040 Moorpark Avenue, San Jose, California 95117-1852, phone:

COMING IN  
THE MARCH  
ISSUE OF  
*hp-ux/usr*

- Customizing an HP-UX System: Access Security and Secured Resources
- Understanding Paging and Swapping



**"The DES Solid State Disk kept my client's profits from going down the tubes."**

"Moving the Temp DB onto the DES Solid State Disk and fine-tuning the queries increased performance by a factor of 50. Now that my client can complete their 30-hour batch processing jobs in 20 minutes, they want to install DES Solid State Disks on all of their servers."

Jim Boak, President  
Database Consultant  
TECH Access

Contact Jim Boak at 510/743-0301 to improve your DB application's performance.

**DES** DISK EMULATION SYSTEMS INC.  
408/727-5497 • Fax 408/727-5496

CIRCLE 86 ON READER SERVICE CARD

*new products*

(800) 441-5758 or (408) 985-7100, fax: (408) 246-3127, e-mail: info@nis.com.

**Oracle-Based Shrink-Wrapped Software**

Vertex Industries, Inc. has entered into an agreement with Kearney Systems, Inc. to create and market a flexible series of shrink-wrapped software for manufacturing processes. Vertex develops and markets BRIDGE.NET, an applications development and data collection management system. Kearney Systems develops and markets Barware software, a barcode-based application used in manufacturing.

Kearney initially will adapt six of its software packages to Oracle, enabling

the database portion of the programs to run under UNIX on RISC-based platforms and use Vertex's BRIDGE.NET software for data collection.

Contact Vertex Industries, Inc., 23 Carol Street, P.O. Box 996, Clifton, New Jersey 07014-0996, phone: (201) 777-3500; contact Kearney Systems, 604 Courtland Street, Suite 180, Orlando, Florida 32804, phone: (407) 740-5220, fax: (407) 645-2546, modem: (407) 645-5832.

**64 MB Kits for Series 715s**

Helios Systems is shipping 64 MB 2-board kits for the HP 9000 Series 715. List price is \$10,000.

Helios Systems manufactures third-party modems and memory upgrade

configurations supporting HP/Apollo and others. The company offers a lifetime warranty on all its memory products, as well as a 30-day, money-back guarantee and toll-free, same-day technical support and customer service.

Contact Helios Systems, 1996 Lundy Avenue, San Jose, California 95131, phone: (408) 432-0292 or (800) 366-0283, fax: (408) 452-4549.

**Terminal Emulation**

MiniSoft, Inc. has announced MiniSoft 92 Version 7.8 for DOS and 3.0 for Windows, which features improved support for Novell's LAN Workplace for DOS. Previous to this release, MiniSoft 92 users making connections through



## New from HP

### *CiscoWorks on HP OpenView*

Hewlett-Packard and Cisco Systems have agreed to port CiscoWorks router-management application onto HP OpenView.

CiscoWorks, first introduced in September 1992, is a comprehensive set of router-management applications designed to enable existing network administration staffs to manage growing networks. CiscoWorks allows companies to automate and centralize administration tasks and to monitor large, dispersed internetworks in real time.

Cisco Systems will become an HP OpenView Solutions Partner, and HP will conduct certification testing to ensure tight integration for the CiscoWorks applications on the HP OpenView platform.

### *New OpenView Application*

Hewlett-Packard has announced new HP OpenView software for managing SNA environments and communicating with host NetView. This software allows SNA networks to be more tightly integrated with the management of Novell NetWare and TCP/IP networks from a single OpenView management station.

The software application, HP OpenView SNA Node Manager, manages SNA networks from one consistent platform with a GUI and tools. OpenView SNA Node Manager is designed to provide network managers with efficient, centralized, and integrated management of SNA network domains.

OpenView SNA Node Manager is expected to be available in the first quarter of 1994. An OpenView SNA Node Manager user license for the HP 9000 Series 800 Business Server or for an HP Apollo 9000 Series 700 workstation is \$12,750.

LAN Workplace could not connect to hosts running Network Services (NS).

Now shipping, Version 7.8 of DOS92 and 3.0 of Win92 allow LAN Workplace users to run a session of their HP 3000. There are no drivers to install on Ethernet or token ring networks if LAN Workplace for DOS (4.1 or later) is already installed, the company notes.

MiniSoft 92 is priced at \$159 per copy.

Contact MiniSoft, Inc., 13617 State Highway 9, Snohomish, Washington

98290-9000, phone: (800) 682-0200, fax: (206) 668-2435.

### **DR11-W Emulator**

Ikon Corporation has announced the new Model 10112, an ISA/EISA board that emulates the function of the DEC DR11-W and is compatible with EISA-based PCs and workstations from HP and others.

The 10112 is software-compatible with the Ikon Model 10094 ISA board but

offers significantly higher performance.

FIFO buffers of 8 KB for both input and output are standard; higher capacities are optional. Small quantity pricing for the board is \$995. Boards are available from shelf stock and evaluation units can be provided on loan.

Contact Ikon Corporation, 2617 Western Avenue, Seattle, Washington 98121, phone: (206) 728-6465, fax: (206) 728-1633.

## Report Writer

Skribe Software, Inc. has announced Skribe Report Writer, a report development tool designed to bridge the gap between end users and software developers and to make creating database reports as simple as typing a letter into a word processor. Skribe's child reports, conditional forms, and conditional objects features are said to eliminate the need for any programming. Skribe Report Writer uses a sophisticated graphical user interface. Skribe is available for all popular SQL and ODBC-compatible databases and operating systems. Developer's kits start at \$1,995.

Contact Skribe Software, Inc., 1533 North Woodward Avenue, Suite 150, Bloomfield Hills, Michigan 48304, phone: (313) 645-2410, fax: (313) 647-0737. ■

*Attention vendors: New product announcements should be sent to New Products Editor, hp-ux/usr Magazine, Interex, P.O. Box 3439, Sunnyvale, California 94088-3439, USA.*

*Deadline for submission is two months prior to publication.*

*New Products refers to numerous products by their trade names. In most cases, these designations are claimed as trademarks or registered trademarks by their respective companies.*

## Interex is your HP-UX advocate

**ad • vo • cate:** to plead in  
favor of, *see support*

HP-UX users can rely on Interex, a 7,500-strong membership organization, as a powerful channel to Hewlett-Packard. Interex is committed to supporting HP-UX users through volunteer committees and special interest groups:

**SIGUNIX**—The Special Interest Group for UNIX, meets at the annual Interex HP Computer Users Conference to discuss areas of concern unique to HP-UX users and to share solutions.

### Systems Improvement

**Committee/HP-UX**—The SIC HP-UX pinpoints specific user needs for the HP-UX operating system and presents its requests for system upgrades, etc. to Hewlett-Packard.

### Advocacy Coordinating

**Committee**—The Advocacy Coordinating Committee facilitates communication between HP-UX users and Hewlett-Packard, enabling users to have specific concerns referred directly to the accountable HP entity. This committee tracks and manages all advocacy requests and publicly discloses the outcome of all advocacy issues.

**INTEREX**

*The International Association of  
Hewlett-Packard Computer Users*


# HEWLETT-PACKARD

## BUY SELL RENT REPAIR

### 1000 3000 9000 TEST

#### MEMORY - PLOTTERS - PRINTERS DISC DRIVES - WORKSTATIONS - DATA ACQUISITION


**1-800-422-4872** HEWLETT - PACKARD AUTHORIZED RENTAL COMPANY




713/935-1500

FAX 713/935-1555

Email: info@tsa.com





2040 West Sam Houston Parkway N. • Houston, Texas 77043

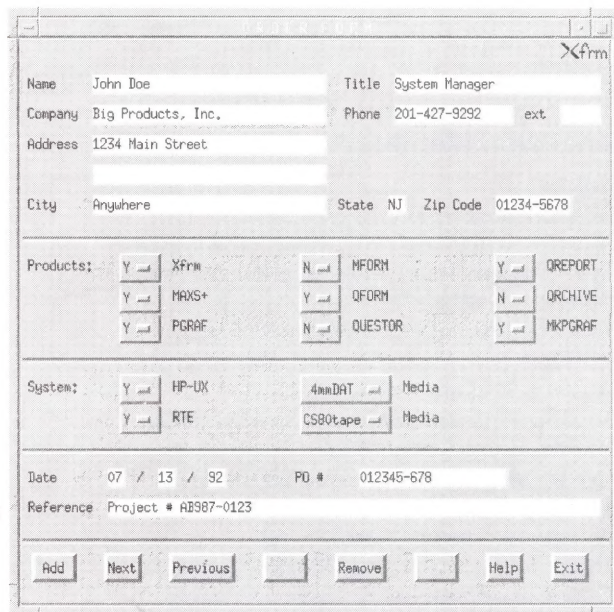
CIRCLE 83 ON READER SERVICE CARD

# Xfrm

## Motif in 5 Minutes

## GUI Builder

X programming without effort  
full featured screens  
realize x screens quickly  
motif was never so easy



The screenshot shows a window titled 'Xfrm' with a form containing the following fields and options:

- Name:** John Doe
- Title:** System Manager
- Company:** Big Products, Inc.
- Phone:** 201-427-9292
- ext:**
- Address:** 1234 Main Street
- City:** Anywhere
- State:** NJ
- Zip Code:** 01234-5678
- Products:**
  - Xfrm (selected)
  - WFORM
  - QREPORT
  - MAXS+
  - QFORM
  - QRCHIVE
  - PGRAF
  - QUESTOR
  - NKPGRAF
- System:**
  - HP-UX
  - 4mmDAT
  - Media
  - RTE
  - CS80tape
  - Media
- Date:** 07 / 13 / 92
- PD #:** 012345-678
- Reference:** Project # AB987-0123
- Buttons:** Add, Next, Previous, Remove, Help, Exit

*Add X to your applications effortlessly  
Performs X11 and Motif calls for you  
Increases programmer productivity  
Dramatically cuts development time*

- No X programming knowledge required
- High level routines manipulate field's data
- Define forms with any UNIX text editor

**Combs International, Inc.**  
886 Belmont Avenue, Suite 3  
North Haledon, NJ 07508-2564

Phone: (201) 427-9292  
Fax: (201) 427-3428  
Internet: rcc@combsint.attmail.com  
CompuServe: 73042, 1711

CIRCLE 45 ON READER SERVICE CARD



**By joining Interex, you'll profit from the skills and experience of talented HP-UX users. By joining now, you can take advantage of two of our strongest HP-UX support services: *hp-ux/usr* magazine and the *hp-ux/resource* directory!**

# Join Interex and get *hp-ux/usr* free.

# INTEREX

**Support services you can count on.**

Interex, The International Association of Hewlett-Packard Computer Users

## 1. YES! I WANT TO JOIN INTEREX.

Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State/Province \_\_\_\_\_  
 Country \_\_\_\_\_ Postal Code \_\_\_\_\_  
 Telephone ( ) \_\_\_\_\_ Ext. \_\_\_\_\_  
 Fax ( ) \_\_\_\_\_ E-mail Address: \_\_\_\_\_  
 Are you currently a member of an HP user group? ☐ Yes ☐ No  
 Group Name \_\_\_\_\_

## COMPLETE ONLY IF "BILL TO" ADDRESS IS DIFFERENT:

Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State/Province \_\_\_\_\_  
 Country \_\_\_\_\_ Postal Code \_\_\_\_\_  
 Telephone ( ) \_\_\_\_\_ Ext. \_\_\_\_\_  
 Fax ( ) \_\_\_\_\_ E-mail Address: \_\_\_\_\_

## Benefits of Membership:

### GENERAL

- \$200 Discount on Interex Conferences
- *hp-ux/usr*, a bimonthly HP-UX technical magazine
- *hp-ux/resource* directory, a bi-annual directory for HP-UX.
- *Interact*, a monthly MPE technical magazine
- *Real-Time Interface*, a quarterly for RTE users
- *INTEREX Press*, a monthly news publication
- Access to Regional User Groups
- Membership in Special Interest Groups (SIGs)
- Bulletin Board Service (BBS)
- Vendor Service Source Product Directory
- Voting privileges
- An advocacy channel directly to HP
- Online access to MPE and HP-UX CSL indices
- Option to upgrade to CSL level membership

*Note: The General Membership does NOT include the Contributed Software Library.*

### CSL/SITE

- Includes all of the above, plus:
- Annual Contributed Software Library (CSL) Release
  - Option to purchase Swap Tapes and past releases
  - Online access to CSL Index
  - Hotline support for CSL at no extra charge

### VOLUNTEER OPPORTUNITIES:

- ☐ Yes, I'd like to help. Please send information.

### SPECIAL INTEREST GROUPS:

- ☐ Please send a list of SIGs affiliated with Interex.

## Interex Membership Offering

Join Interex for \$95 and also get the new *hp-ux/resource* directory. A comprehensive guide to software, hardware, consulting, and training information for HP-UX users!

## 2. THE SERVICE LEVEL THAT BEST MEETS MY NEEDS IS:

- ☐ **Sign me up for a General Membership**  
 \$95\* Annual Fee
- ☐ **Sign me up for a CSL/Site Membership**  
 \$495\* Annual Fee

☐ \*Outside of USA, add \$50 for shipping charges.

usr1

## SELECT OPERATING SYSTEM FOR CSL TAPE:

(ONE TAPE IS INCLUDED WITH CSL/SITE MEMBERSHIP. ADDITIONAL TAPES ARE AVAILABLE FOR \$400 EACH)

- ☐ HP-UX ☐ MPE V ☐ MPE XL (iX) ☐ RTE

## SELECT SOFTWARE FORMAT FOR CSL TAPE: (CHECK ONE)

- ☐ 1600 BPI magnetic tape ☐ 6250 BPI magnetic tape  
☐ Linus cartridge tape (CS-80) ☐ DAT 4mm (Digital Audio Tape)

## PLEASE READ AND SIGN THE FOLLOWING DISCLAIMER:

I am applying for services with Interex. I understand that no funds will be returned after any Contributed Software Library tapes/disks have been shipped from Interex. I agree not to distribute software to any unauthorized users or use software received through Interex on more than one system at a time. I understand that this agreement stays in force even after my services expire or are terminated.

Signature \_\_\_\_\_ Date \_\_\_\_\_

## 3. COMPUTERS AT SITE (ENTER NUMBER OF COMPUTERS AT YOUR SITE):

### HP 3000

Series 9XX, no. at site \_\_\_\_\_  
 Classic, no. at site \_\_\_\_\_

### HP 9000

Series 8XX, no. at site \_\_\_\_\_

### HP 1000

Series 9XX, no. at site \_\_\_\_\_

### WORKSTATIONS

HP Series 700, no. at site \_\_\_\_\_  
 HP Series 400/300/200, no. at site \_\_\_\_\_  
 Apollo/Domain, no. at site \_\_\_\_\_  
 Sun, no. at site \_\_\_\_\_  
 Dec, no. at site \_\_\_\_\_  
 Other, no. at site \_\_\_\_\_

## 4. SEND THIS PAGE WITH PAYMENT TO:

Interex, Dept. 1530, P.O. Box 61000, San Francisco, CA 94161, U.S.A.

## OR MAIL/FAX THIS PAGE WITH CREDIT CARD INFO TO:

Interex, Acct. Dept., P.O. Box 3439, Sunnyvale, CA, 94088-3439, U.S.A.  
 FAX (408) 747-0947 Phone (408) 747-0227 or (800) Interex (U.S. and Canada only).

## 5. PAYMENT OPTIONS:

(U.S. currency) Total \$ \_\_\_\_\_

- ☐ Check enclosed payable to Interex
- ☐ Bill me\*\*
- ☐ P.O. enclosed, # \_\_\_\_\_, please invoice.\*\*
- ☐ Please charge my: ☐ VISA ☐ MasterCard ☐ American Express
- Account No. \_\_\_\_\_

Signature \_\_\_\_\_ Exp Date \_\_\_\_/\_\_\_\_

\*\*Service begins when payment is received.

## 6. SERVICE AGREEMENT:

If you relocate, should the membership transfer with you?

☐ Yes ☐ No Initial \_\_\_\_\_

We provide blind mailing of computer-related materials for vendors.

Would you like to receive these mailings? ☐ Yes ☐ No





**N**ow you can add workstations to your Domain/OS or HP-UX environment at only a fraction of the list price.

That's what remanufacturing is all about. Recent model, lower cost equipment that runs like new because it has been rebuilt. From the ground up. To manufacturer's specifications.

Literally manufactured a second time. By Tryonics,

**Why  
pay  
more  
?**

the people who know how to optimize these systems for your installation—new or existing.

**Tryonics** delivers the highest quality remanufactured workstations on the market today. Backed with technical expertise, full 90-day warranty and eligible for manufacturer's maintenance contract.

Before you pay more, call  
**1-800 551-6236**

 ***tryonics inc.***

Workstation Computers and Services

CIRCLE 23 ON READER CARD

Fax (603)-427-6843 Email: [info@tryonics.com](mailto:info@tryonics.com) 170 West Road Suite #15 Portsmouth, NH 03801



# Reflection X. Taking X to its highest power.

In the challenging world of X, power is more than just speed. It's the power of people and product. It's the reliability you need to run mission-critical applications. The power to transform your working world.

Reflection® X is a fast, dependable X11R5-compliant PC X server for Microsoft Windows. You'll get 32-bit processing with single- and multiple-window modes, and a superb implementation of FTP, developed especially for Windows.

The Reflection X Connectivity Suite takes the X Window System to a new level of performance. With award-winning VT320 emulation and reliable network transports, *it delivers complete PC-to-UNIX connectivity.* And it's backed by a group of professionals with over a decade of experience producing standard-setting PC software. Plus a top-notch support team that puts the customer first.

That's why Reflection X is the PC X server you can count on, day after day. With help as near as your phone—though you'll probably never need to call. For unparalleled connectivity with speed, dependability, and support, choose Reflection X. And take X to its highest power.

**For more information**

**Call today for special pricing on  
upgrades from competitive products!**

**1-800-92NETWORK**

 **Reflection**  
*Making PC Connections Count*

Walker Richer & Quinn, Inc.  
2815 Eastlake Avenue East, Seattle, Washington 98102 / 206.324.0407 / FAX: 206.322.8151  
Buitenhof 47, 2513 AH Den Haag, The Netherlands / +31.70.375.11.00 / FAX: +31.70.356.12.44  
Reflection is a registered trademark of Walker Richer & Quinn, Inc.  
All other trademarks are the property of their respective holders.

**CIRCLE 88 ON READER SERVICE CARD**